2003–04 Participant Testimonials

The Community in support of

The Banff International Research Station for Mathematical Innovation and Discovery (BIRS)

March 8, 2005

Foreword

Our event connects two nations, the United States and Canada, exemplary neighbours who have always cherished peace between each other. In that tradition, today we inaugurate an enterprise that represents the best of the human spirit.

With these words from the former NSF director, Rita Colwell, the Banff International Research Station was inaugurated in 2003. Since then, BIRS has developed, through a unique bi-national scientific partnership, into a tremendous resource for the world's international scientific community. In two short years, the station has hosted over 4000 researchers from 49 countries that participated in over 120 different programs spanning almost every aspect of pure, applied, computational and industrial mathematics, statistics, computer science, but also in physics and astronomy, biology, and engineering.

The hallmark of a good idea is that so many people find it obvious once it has been mentioned. How true were these words of NSERC's President, Tom Brzustowski, at this same inauguration ceremony of BIRS in 2003. Since then, the extraordinary response to the opportunities at BIRS has led to extremely high quality competitions with over 450 proposed activities competing for the 150 available weeks in the period 2003-06. The proposals received, cover huge areas of the basic and engineering sciences but also economics, finance, psychology and scientific writing.

It is also fair to say that not everybody found the concept of BIRS obvious at first. But what is more compelling than the testimonial of initial skeptics? and it took nothing less but a major impact of BIRS on Toronto's Victor Ivrii's research but also on his son's experience at BIRS while training for the International Mathematics Olympiad. He wrote:

Honestly I was rather reserved about BIRS when the idea came first. Then at the beginning of 2003 I participated in the workshop and was converted (because) very important progress in my work –Sharp Spectral Asymptotics for Operators with Irregular Coefficients. IV. Multidimensional Schrödinger operator with a strong magnetic field. Full-rank case– was done during a BIRS workshop. Nothing much to add to this except: in the Summer 2003 my son Oleg was in BIRS (International Mathematics Olympiad training camps) and he and those his teammates I know were absolutely excited by their stay.

Since then, over 500 scientists from all over the world wrote compelling testimonials on the impact on their research of their participation in BIRS activities. The letters –collected in this book– are candid and specific at the impact of BIRS on their professional lives. Graduate students told us how BIRS contributed to their first theorems, their first contacts and their first jobs. Established mathematicians told us about their collaborative breakthroughs at BIRS, the theorems they proved brick by brick, and the conjectures they dispelled in "two minutes". Scientists from smaller universities told us about the access BIRS gave them to their peers from more prominent institutions, and private sector researchers told us about their rewarding contacts with their academic peers. All in all, the book of testimonials represents a remarkably uplifting experience to all individuals and organizations who made BIRS a reality.

Oberwolfach has always been an international treasure for the world's mathematical community, which made the following comment of Ron Graham (San Diego) particularly rewarding: *"It is clear that BIRS has been (and is continuing to be) a very positive force in the world on mathematics. I'm sure this will put a lot of pressure on Oberwolfach!.*

But it is the following e-mail from Nima Geffen (Tel Aviv University) that captures why BIRS was destined to be Canada's gift to the scientific world: *BIRS is an exemplary research station, the very best in my view. I find it fitting that it is in Canada, where consideration, kindness and compassion have been the order of the day (at least more than in any other place that I know). It is an inspiring place to be developed, cherished and used, as much as feasible, for the benefit of all.*

All this because Canada is blessed with accomplished scientists and extremely generous human beings like Robert V. Moody who dedicated almost 3 years of his professional life to BIRS establishment. He kindly wrote us from his partial "retirement": *I think back to the creation of BIRS and I can only feel that it was a miracle. It is a wonderful treasure for North America, Canada, and the PIMS community. Long may the miracle continue!*

Amen!

Nassif Ghoussoub,
BIRS Scientific Director

Contents

541. Philip Holmes, Professor of Mechanics and Applied Mathematics, Princeton University

542. Vagn Lundsgaard Hansen, Professor, Department of Mathematics, Technical University of Denmark

543. Wendy Brandts, Physics, Faculty of Science, University of Ottawa

544. Tony Guttmann, Director, Australian Research Council, Centre of Excellence for Mathematics and Statistics of Complex Systems

1 Robert Moody, University of Alberta

It amazing how quickly the time has seemed to pass since we obtained our first funding from ASRA, NSERC, and the NSF for creating and operating BIRS. I was privileged to be involved with the creation of BIRS, the choosing its programming for the years of 2003 - 2005, and the day-to-day operations of BIRS during its first year of operation.

No doubt the greatest pleasure from all of this was to see the actual BIRS events running. Each week a new group of participants would arrive and in each case its participants immediately fell in love with the facility and its wonderful amenities. In each case we were in for a week of research-intensive mathematics attended by some of the finest minds on the planet. I cannot think of an event in which the participants were disappointed by what they achieved, and there were several events in which they were absolutely ecstatic about it. BIRS encourages events that bring new people and new disciplines together, and in some cases the mix was just outstandingly successful.

One of the particularly attractive features of the way BIRS is arranged is that event organizers need only worry about the scientific side of things. All the petty details of invitations, room and board, etc. are handled by the staff at PIMS and BIRS. Likewise for participants – all they need to do is get themselves to Banff. The rest is looked after. No wonder that there has been such a high demand for workshop slots (consistently over 2:1 ratio of applications to slots available, and for 2006, 2.5 : 1).

Another reason that BIRS has been so successful is the quality of the local staff – really outstanding. Andrea is a wonderfully genial and efficient host, and Brent has produced a local computer system that is a source of constant praise from our visitors. I recall that in the early days, when everything was not yet quite perfected, one particularly well-known organizer said to me just as he was arriving that he had a few things to discuss with me about the way things were done. At the end of the conference I finally caught up with him and asked him what tell me what was on his mind. He said, "Robert, I have only one thing to say about this place — it's fantastic!"

One of the things that I am particularly proud of is the way in which BIRS serves four different communities in such a nice way. First and foremost, it is an INTERNATIONAL research station. Every workshop attests to this fact. But we know that it is the North American community that accounts for the majority of the users, and this is as it should be: BIRS was to some extent a response to the famous MFO in Oberwolfach (Germany) and CIRM at Luminy (France), which had done so much for European mathematics.

The insistence that all BIRS events have a Canadian amongst the organizers has led to a significant presence of Canadians at every meeting. The local PIMS community has benefited too. Of course PIMS has a direct say in some 12 weeks of the yearly programming, but a quick look at the record will show that PIMS researchers are organizers involved in far more events than that. This is not due to favouritism on the part of the BIRS Scientific Review Panel. The BIRS panel pays no attention to anything except scientific quality and scientific balance across the mathematical sciences. But of course our local community has many strengths and consistently comes forth with many good proposals each year.

Beyond this there are the two day events, squeezed between the regular five-day workshops, which have provided a cost-effective way of supporting the local PIMS and Alberta communities, as well as providing a facility for events of particular timeliness. I think here, for example, of several workshops for teachers in Alberta and British Columbia, and the mini-conference on SARS, which led subsequently to a full-fledged workshop at BIRS.

Beyond these events, BIRS hosts a program of research-in-teams. This allows small groups (2 to 8 people) time to escape from the usual stresses of their university or research institutions to work on difficult problems in a sustained way or to finish large projects, like books, which just need uninterrupted time. I have always been a big supporter of research-in-teams, since I have had been on a similar program at Oberwolfach several times. Each time was just fantastic – we got so much done, maybe three times as much as we could have done if we had met in our own institutes. I know from talking to those doing the same thing at BIRS that this type of program is deeply appreciated by those who used it.

Thus I think that in all respects BIRS has been what we all had hoped it would be – in fact even more. For its modest cost (in terms of what science costs in general) BIRS is terrific value for the money. It already has an international reputation, even to the extent that the MFO, the CIRM, and BIRS are now spoken of in equal terms. With its glorious location and the surrounding culture of the Banff Centre, it is unique.

I worked with the BIRS project for three years, including being on-site most of the time during its first full year of operation. I left the project, once that I felt that my job was done. Still, whenever I sit in the dining room of the Banff Centre, gazing at the

Rocky Mountains in the background, I think back to the creation of BIRS and I can only feel that it was a miracle. It is a wonderful treasure for North America, Canada, and the PIMS community. Long may the miracle continue!

2 Tucker Carrington, University of Montreal

I attended a workshop at BIRS about one year ago. Participating in the workshop gave me the chance to meet other scientists working in similar fields. The workshop was run extremely well. I strongly support the renewal of BIRS.

3 Raphael Bousso, Assistant Professor, Department of Physics, University of California

I attended the BIRS workshop on string theory and cosmology in June. It was an extremely valuable experience. Workshops of this format are in my view by far the most useful way of organizing a meeting: put a few dozen people in an isolated environment and watch the sparks fly. Certainly a few flew my way; indeed, the workshop influenced the focus of my research, moving it from more formal considerations back to fundamental questions of cosmology. Two papers which I am now finalizing and which I expect will appear in the next few weeks are the direct result of this process.

4 Karl Petersen, Department of Mathematics, University of North Carolina

I very much enjoyed the week I spent at BIRS in July 2003 as a participant in the workshop on Joint Dynamics. The setup and hospitality are just wonderful, allowing for formal sessions as well as informal interactions, especially in the breakfast/lounge area and the conference rooms. The computers and connections in the individual rooms are extremely useful. As a result of that stimulating environment, I thought about the joint action of the shift and odometer on the space of infinite two-sided sequences of 0's and 1's. I will be speaking about the first results at the School on Information and Randomness in Santiago, Chile, in December 2004 (this month). I am conducting further research on how things would change if the odometer were to be replaced by the Pascal adic. One or more publications will result from this work. I very much look forward to my next visit to BIRS. I wish I could get there this summer for the Bridges workshop, but I am likely to be in Europe at that time.

5 Bruce Reed, Canada Research Chair in Graph Theory, McGill University

I would like to express how important I think BIRS is to the Canadian mathematical community. The events organized there play a seminal role in fostering contacts and germinating new research directions. By taking the organizational and financial burdens off the shoulder of the researchers, BIRS makes these events much more likely to happen. Having the centre at a world renowned beauty spot helps to ensure the participation of top mathematicians who must turn down many invitations every year. I think it is imperative that this programme be continued and extended as much as possible.

6 Bruce Shepherd, Bell Labs

I participated in the previous year, and I believe I gave my feedback at that time. However, let me just summarise and say how fruitful (and enjoyable) the workshop I attended was. I wish you the best of luck on the renewal.

7 Robert E. Kass, Department of Statistics, Professor, Department of Statistics, Carnegie Mellon University

BIRS was a great opportunity for me to discuss research with some people doing related work, people I had not previously been able to meet. It has led to an extended visit for me in the department of one of the principals, which I am looking forward to and which I presume will be productive.

Good luck with the proposal.

8 Ryan Haskett, Duke University

Banff was simply the nicest (and most beautiful) conference area I've been to. The facilities and service was very good. The computers in the room were a nice touch as well so I could keep my numerical computations going during the conference.

9 Robert J. Elliott, RBC Financial Group Professor of Finance, University of Calgary

I am very pleased to write in support of the Banff International Research Station. Situated in a picturesque location as part of the Banff Centre, the Research Station provides hospitality and lecture rooms for high level research conferences in mathematics. The atmosphere is particularly conducive to fruitful discussions and interaction. Having taken part in such meetings I can say they are very valuable. One of the most useful aspects of a recent meeting on Financial Risk was the participation of people from the energy companies in downtown Calgary. Their presence helped clarify and define problems of interest.

10 John R. Klein, Wayne State University

I have thus far participated in 2 BIRS workshops, and I am delighted with the way the institute is set up. The staff is very congenial, and Banff is an fun place to do mathematical research. The one thing which needs to be developed, I think, is a mathematics research library.

Until BIRS, there was no place in North America which could compete with Oberwolfach mathematical conference and workshop facilities. I believe that BIRS is destined to fulfil the role that Oberwolfach plays in Europe.

Long Live BIRS!

11 Savdeep Sethi, Assistant Professor of Physics, Enrico Fermi Institute, University of Chicago

I attended a BIRS workshop on string theory and mathematics in the last year. It was a pleasurable and stimulating experience; particularly, because of the interdisciplinary nature of the program. I would strongly support future BIRS workshops of this kind.

12 Antonio Sa Barreto, Professor, Department of Mathematics, Purdue University

The meeting I attended at BIRS was very helpful to my research. I gave a talk on the subject I was working on and had a chance to talk to several people there, including Rafe Mazzeo and Robin Graham, about what I wanted to prove. Sometime later, and partly because of those conversations, I was able to prove the result I wanted. The paper entitled "Radiation Fields, Scattering and Inverse Scattering" (http://xxx.lanl.gov/math.AP/0312108) is to appear in the Duke Math Journal.

13 Victor Ivrii, Professor of Department of Mathematics, University of Toronto

Honestly I was rather reserved about BIRS when the idea came first. Then at the beginning of 2003 I participated in the workshop and was converted. In accordance to the request of Robert who was then the Director of BIRS station I sent the message that very important progress in my work

Sharp Spectral Asymptotics for Operators with Irregular Coefficients. IV. Multidimensional Schrödinger operator with a strong magnetic field. Full-rank case ($>$ 80 pp) was done during BIRS workshop.

Nothing much to add to this except: in the Summer 2003 my son Oleg was in BIRS (IMO training camps) and he and those his teammates I know were absolutely excited by their stay. Would be it helpful if he wrote something too?

14 Andrew Park, PDF Epidemiology, Dept. Biology, Queen's University, Dept. Math and Stats, York University

I attended a special program in infectious diseases in the summer of 2004. this was a unique opportunity to bring together scientists and mathematicians with a wide variety of experiences. The venue was excellent both in its strategic, beautiful location and in its modern, community-style structure.

15 Chi-Kwong Li, Professor, Department of Mathematics, The College of William & Mary

I have attended two BIRS workshops in 2003-04, and I had wonderful experience.

In Nov. 2003, I attended the workshop on eigenvalues and singular values. It gave me a chance to describe the most current theoretical results in the study of eigenvalue and singular value inequalities to the numerical linear algebra colleagues. In return, I learned more about problems and concerns in numerical linear algebra. These broaden my outlook of research on the topic. As a result, I have collaborated with more colleagues on numerical linear algebra leading to the following papers:

1. C.K. Li and R.C. Li, A Note on Eigenvalues of Perturbed Hermitian Matrices Linear Algebra Appl., to appear.

2. Z.Z. Bai, G. Golub, and C.K. Li, Optimal Parameters in Hermitian and Skew-Hermitian Splitting Method for Certain Two-by-Two Block Matrices, submitted. 3. Z.Z. Bai, G. Golub, and C.K. Li, Convergence Properties of Preconditioned Hermitian and Skew-Hermitian Splitting Methods for Non-Hermitian Positive Semidefinite Matrices, submitted.

In May, I attended the Combinatorial Matrix Theory workshop. Again, it was helpful for me to exchange my experience and results with other colleagues. In particular, my recent solution on the open problem about 5x5 full ray nonsingular matrices was made better known. (Reference: C.K. Li, T. Milligan, and B. Shader, Non-existence of 5X5 full ray nonsingular matrices, Electronic Linear Algebra 11 (2004), 212-240.)

Also, I learned new problems and ideas from colleagues, and I am still currently working on some open problems presented in the meeting.

16 Petra Klepac, PhD Candidate, MIT/WHOI Joint Program in Oceanography, Biology Department, Woods Hole Oceanographic Institution

BIRS made irreplaceable contribution to my studies and my PhD research. In summer 2004 I participated in PIMS-MITACS-MSRI Special Program on Infectious Diseases Summer School. The faculty at the summer school were the leaders in theoretical epidemiology from all of North America. I have not only learned about the "hot topics" in the field, but I also had an opportunity to discuss the specifics of my dissertation research with these experts.

This experience was crucial for my PhD progress and I hope BIRS will continue organizing such successful mathematically oriented workshops in the future.

17 Jinqiao Duan, Professor, Department of Applied Mathematics, Illinois Institute of Technology

I enjoyed my BIRS visit very much:

1. The research-in-team activity that I participated helped to push forward the very new area of invariant manifolds for stochastic partial differential equations We have two papers in press (resulting from this activity):

J. Duan, K. Lu and B. Schmalfuss, Invariant manifolds for stochastic partial differential equations (PDF). Annals of Probability 31(2003), 2109-2135.

J. Duan, K. Lu and B. Schmalfuss, Stable and unstable manifolds for stochastic partial differential equations (PDF). J. Dynamics and Diff. Eqns 2004, Vol. 16, No. 2, in press.

2. The activity also helped me to design a new course in stochastic partial differential equations:

http://www.iit.edu/ duan/courses/545text

Jinqiao Duan, Professor Department of Applied Mathematics Illinois Institute of Technology

18 Michael Singer, North Carolina State University

I attended a Banff Workshop in Model Theory in the Winter/Spring of 2004. This is not my main field of research but I have needed, more and more, results and techniques from this area for my own research program. Attending this workshop allowed me to have face-to-face interaction with the experts who were able to direct my attention to the appropriate concepts and references (and clarify my misconceptions). My present work would not have come to fruition without this experience.

19 Francois Labourié, Membre de l'Institut Universitaire de France, President du Departement de Mathematiques de l'Universite Paris XI

I participated to the conference "New Techniques in Lorentz Manifold" in BIRS. I found that the working conditions were excellent. On a material level first (lodging,computer access, help from the staff), but more importantly on a scientific level. The BIRS center is a remarkable place for discussions both formal (conferences) and informal, mainly thanks to the fact the lodging is integrated in the conference center. It is definitely comparable on that grounds to CIRM in France and MFO in Oberwolfach (and certainly superior to other conference centers I have visited ...).

I came back from that conference with new ideas that I hope I will make fructify in the near future. I strongly support BIRS renewal.

20 Pramathanath Sastry, Associate Professor (CLTA), University of Toronto

I participated in a BIRS RIT program in August 2003. The official number was 03rit005 and the title was "Variance of quasi-coherent torsion Cousin complexes". The other members of the team were Professors Joseph Lipman and Suresh Nayak.

Our time at BIRS was *extremely* critical to our research. We had a broad outline of what we wished to do, but we knew it would take more than 100 pages of manuscript, and this needed close cooperation and "face time". In the end the manuscript we produced (three papers to appear in AMS's contemporary mathematics) is 276 pages (more than double the estimate we had). We would certainly not have been able to nail the issues, work through the details, and come up with new ideas (which extended the scope of the original plan) if it hadn't been for our time at BIRS. The natural beauty, and the efficient organisation were just what we needed.

I have already (unsolicited) sent a testimonial to Professor Ghoussoub. The manuscript that I am talking about can be downloaded from www.math.purdue.edu/ lipman/CONM.pdf if it helps with any upcoming review.

Please once again accept my heartfelt thanks for giving us the opportunity to finish this work. I very much doubt if we could have done it without the help of BIRS.

21 Richard Kenyon, Department of Mathematics, University of British Columbia

my week at Banff in June, 2003 was an excellent research opportunity for me, and I had a very fruitful collaboration with researchers there. In particular with Boris Solomyak and Lorenzo Sadun we have a joint paper based on work we started while there: "Topological mixing for substitutions on two letters", submitted to ETDS. Moreover it gave me an opportunity to present my recent work on statistical mechanics to a community of dynamicists who would not ordinarily have known about this work, since the two fields, although close to one another, usually have distinct conferences and workshops.

I am co-author of a proposal for a BIRS research conference, and I find this venue is really the best way of getting colleagues from around Canada and the US together. It makes the job of organizing a conference significantly easier.

22 Matthew Hedden, Department of Mathematics, Columbia University

In the Fall of 2003, I attended an MSRI hot topics workshop at BIRS on Heegaard Floer Homology and Gauge Theory. At the time I was a third year graduate student. This conference and the experience with BIRS had a profound impact on my mathematical development. The accommodations and organization of the conference served as the perfect environment for an intense and stimulating mathematical experience. At this workshop I proved my first theorem, due in large part to the excitement and intensity of the conference. I view the conference as a turning point, or more accurately as the starting point, for my mathematical career. I would love to come back to BIRS for similar experiences in the future and hope that it will exist for others, as well.

23 Anne-Gaelle Rolland-Lagan, Department of Computer Science, University of Calgary

I attended a PIMS meeting for postdoctoral fellows at The Banff International Research Station (BIRS) in April 2004. This was a particularly enjoyable place for the meeting to be held, with great computing facilities, and great working and recreational areas designed to favor the exchange of ideas between participants. The meeting I attended at BIRS was particularly useful, as it allowed me to exchange with other postdoctoral fellows in a great atmosphere, and I did take home valuable advice, in particular on how to make a successful transition from a postdoctoral fellowship to an assistant professorship.

24 Zhongshan Li, Associate Professor of Mathematics, Georgia State University

I found the Workshop on Combinatorial Matrix Theory sponsored by BIRS most stimulating and pleasant. I talked with many other participants there; such exchange of ideas was very beneficial to my research projects.

The mathematics community is indebted to BIRS for offering many exciting and stimulating workshops.

25 Adrian Butscher, Department of Mathematics, University of Toronto at Scarborough

I participated in the BIRS workshop on Geometric Evolution Equations (GEE) in July of 2004 that was organized by Klaus Ecker and Ben Chow. At present, GEE is a dynamic and very relevant area in Riemannian geometry and geometric analysis because of recent advances in the field stimulated by Perelman's discoveries. I am not an active researcher in GEE, although it is a great interest of mine. I thus benefited enormously from interacting with the leading researchers in GEE who were assembled in Banff for the workshop. Furthermore, I identified an area in which GEE overlaps with my own research, and an idea for a future research paper was born. I have since been invited to another GEE workshop by the researcher with whom I discussed this idea at Banff, and we will investigate the idea further.

Please consider me a strong supporter of BIRS and the role it plays in uniting mathematicians both internationally and within Canada.

26 Hamid Bolouri, Professor of Computational Biology, Institute for Systems Biology

I am writing to express my enthusiastic support for further funding of the The Banff International Research Station. As a former participant, I applaud the efficiency of the organization at BIRS and the wonderful environment it provides for true scientific interaction. The workshops at BIRS present a unique opportunity for leading researchers to discuss well-focused topics, spend extended periods together, and go well beyond the superficial exchanges that dominate most other meetings. BIRS also enriches Canadian research and academia by bringing international researchers to its meetings. I cannot think of a better way to encourage good research in Canada!

27 Steve Harris, Saint Louis University

I participated in the BIRS workshop in New Directions in Lorentzian Manifolds. I found the conference materially helpful to me in my discussions with one of the Workshop leaders, Virginie Charette: Together we were able to determine that in my examination of group actions on Euclidean space, I had exhausted all the possibilities that fit my needs, so that I know that I must look to group actions on other spaces in order to get new examples for my boundary methods. (This was the answer to one of the open problems that I posed at our workshops problem session.)

I also initiated contact with Charles France, who posed a question to me that I was able to give a partial answer to while at the workshop. This may become the kernel for future work.

28 Paul Monsky, Brandeis University

The workshop I participated in this September was very useful to me. I met with Hara for the first time, and it turned out that the theory of p-fractals developed by Teixeira and me was just what he needed to prove the rationality of a certain invariant he had been studying. (We will have a joint paper on this.) I also met one of my co-authors, Moira McDermott, for the first time, and renewed old friendships with Buchweitz,Miller, Watanabe and others. Quite apart from this, the calmness and beauty of the area does one good.

29 Michael Overton, Professor of Computer Science and Mathematics, Courant Institute of Mathematical Sciences, New York University, Chair, SIAM Board of Trustees, Scientific Advisory Board, Fields Institute of Mathematical Sciences, Board of Directors, Canadian Mathematical Society

BIRS kindly invited me as an outside speaker in the Pacific Northwest Numerical Analysis Workshop, Sept 30-Oct 2, 2004. It was a great opportunity for me to catch up with the numerical analysis community in B.C. and Washington State, learn what others were doing, and talk about my own recent research. I graduated from UBC thirty years ago and have spent my career at the Courant Institute in New York, but I very much enjoy opportunities to return to Canada and make contacts with old and new friends. In this case, "old" and "new" are apt descriptors, as the most exciting part of my visit researchwise was an interchange with Jim Varah (just retired from UBC) and Chen Greif (a young faculty member there). Varah and Greif are interested in the question of how to optimize the condition number of a low-rank perturbation to a singular or nearly singular matrix, an interesting question mathematically that also has important potential applications. This optimization problem is nonconvex but amenable to some numerical techniques that I have been working on recently. We made some interesting observations just running MATLAB on my laptop at BIRS, and since then Varah and Greif have apparently obtained some beautiful theoretical results that I haven't yet absorbed. In any case, it was a fascinating problem and a delightful place to work on it. The setting at BIRS is really spectacular and there is absolutely no doubt that the availability of such a facility has enormously improved the Canadian mathematical infrastructure. A place like BIRS attracts top people from all over the world who would not be interested in attending a conference in an ordinary big-hotel big-city location. The peaceful atmosphere is very conducive

to conducting research as it affords the opportunity to concentrate and to interact with others in an informal surrounding. The quality of the workshops at BIRS is also outstanding. There is so much interest in BIRS that the workshop selections process is very competitive (as I know since I was hopeful to attend another one that ultimately wasn't funded, not because the quality wasn't high, but because of the limited number of slots).

You are very fortunate to have a facility like BIRS, and I look forward to another productive visit on another occasion.

30 Vilmos Totik, professor of mathematics, USF and U. Szeged, Member of the Hungarian Academy of Sciences

I have been participating at a workshop on pluripotential theory. This is a relatively new and fast growing subject, and BIRS made it possible to gather experts and to-be experts from all over the World. It was a really stimulating experience to listen to the talks and making contacts with people working in other areas. The BIRS facilities were just outstanding, I believe we need an Oberwolfach like BIRS here in Canada and the US. It was particularly appealing that BIRS was supporting new areas such as pluripotential theory.

31 Priscilla Greenwood, Research Professor, Department of Mathematics and Statistics, Arizona State University

I participated in a BIRS workshop in August 2004. It was on the topic of stochastic models in genomics. Genomics has become a "hot" topic lately, particularly certain highly statistical aspects. This workshop was distinguished by having a different focus, and by bringing together top probabilists several of whom are working in this area only recently, as well as some very outstanding well-known geneticists, and several young people who are being drawn to the fascinating new field of stochastic modeling in genomics. My own work in this area is not published yet (not many people know I am doing these things) and so this workshop was an excellent way for me and others in my position to participate, find out who else is involved and what range of things are happening. I learned, for example, that a colleague at the University of Frankfurt, Anton Wakobinger, with whom I had been out of touch for several years, is now working on topics very close to mine. We are now in touch about our common interests.

As a joint U.S.-Canadian citizen and long-time faculty member at U.B.C., now working in the U.S. because of B.C. retirement rules, I am proud to have the first "Oberwolfach-like" mathematical meeting place in North America located at Banff. This gives Canadian mathematical sciences a new prominence in the world, and contributes importantly to bringing the mathematical world to Canada.

32 Lorenzo Sadun, Professor of Mathematics, University of Texas at Austin

I have been to two week-long BIRS conferences (Joint dynamics in 2003 and Aperiodic Order in 2004) and am helping to organize a Focussed Research Group in Topological Methods for Aperiodic Tilings in 2005. The two past conferences were excellent, and greatly helped my research. I can only hope that this summer's FRG will be up to the same standards!

At the 2003 Joint Dynamics conference, Robbie Robinson posed an interesting problem in one of his talks. Hiking on Tunnel Mountain the next day, Charles Radin, Charles Holton and I solved it. I also received very valuable feedback on the work I was doing with Alex Clark on deformations of tilings. With the help of that feedback, we solved the problem completely several months later. I also learned a tremendous amount about the interaction of C* algebras and tiling theory.

Although the 2004 Aperiodic Order conference has not (yet) yielded such dramatic successes, it has greatly influenced my work this year, and the work of my graduate student, Betsygail Rand. Discussions I had with Ian Putnam on pattern-equivariant cohomology led directly to Ms. Rand's PhD thesis problem, on understanding this cohomology in a rotationally equivariant way.

In my experience, BIRS is clearly succeeding in its mission to facilitate high-quality mathematics and high-quality mathematical interactions.

33 Rebecca Tyson, Assistant Professor, Department of Mathematics and Statistics, Okanagan University College

I hasten to write this email with my full and enthusiastic support for the BIRS workshops. I have attended two such workshops, one in the summer of 2003 (The Legacy of Lee Segel) and one which has just ended (Mathematical Models for Biological Invasions). Both BIRS workshops have been incredibly useful experiences for me in terms of my research career, for a number of reasons.

At both workshops I had the opportunity to meet with a large number of important researchers in my field, and to discuss my research with them. I made some contacts which have remained extremely important to me throughout the following year, and I anticipate that these friendships will continue to grow and provide valuable support to my research program in a number of ways. These can include direct collaboration, but contacts can also be sources of graduate students and postdoctoral associates, invitations to conferences, invitations to seminar series, and co-organisers of workshops and meetings.

My own research program has had time to grow since my first BIRS workshop, and so at this most recent one I have made no less than four research contacts which may shortly lead to collaborative work which I couldn't otherwise have done. I have also benefited from the impressive knowledge of the assembled group, and am anxious to apply the ideas and techniques I have gained to my current research problems. As at the first workshop, I have also considerably expanded my network of research contacts, and I am certain that these will be equally important to my research activities as the contacts I made in July 2003.

All of the benefits listed above can be obtained at a conference, but never with the same magnitude. BIRS workshops are unique in that they gather a small group of people together for an intense scientific interaction over a period of several days. Even meals are taken together since everyone is housed in the same place. As a result, friendships are much more easily formed, it is not difficult to meet everyone on a more than superficial basis, and collaborations are easy to initiate. There are the time and the opportunity to talk science with co-participants, and the atmosphere is unhurried, pleasant and conducive to productive research.

I was absolutely delighted to be invited to my first BIRS workshop. When I received my invitation to a second one I felt as though I had won the lottery! I can't recommend these workshops highly enough, and I hope that they continue for some time to come.

34 Juan Migliore, University of Notre Dame

I was fortunate enough to participate in the workshop "Commutative Algebra and Geometry," held at the Banff International Research Station from March 29 to April 3, 2003. The organizers were Mark Green and Jurgen Herzog. It was a very stimulating experience for me. It brought me in contact with many other researchers in my field, and a lively and useful series of conversations took place. Some of these contacts are people that I have seen only a few times, or indeed in one or two cases people I had heard of but never met. In particular, speaking with David Cox allowed me to make improvements to a paper that was nearly finished (joint with Chris Peterson), that has since appeared in the Journal of Symbolic Computation. Speaking with Mircea Mustata provided useful insights (about what was and was not known) that guided me in a joint paper completed later with Rosa Miro-Roig and Uwe Nagel, that has since been accepted by the Journal of Algebra. I also had useful conversations with Aldo Conca, Tony Iarrobino, David Eisenbud, Mats Boij, Martin Kreuzer and Greg Smith. And several of the talks were very interesting to me.

BIRS is in a wonderful location, and is set up in a way that is ideal for mathematical research. It compares very favorably with Oberwolfach, in Germany. I am very happy to have attended this workshop, and my research has certainly benefited from it. Thank you for the fantastic service that your Institute provides for the mathematical community.

35 Mengzhe Maggie Wang, Department of Math and Stat Sciences, University of Alberta

I like BIRS in Banff. It helps me a lot in my research. Also I enjoy the beauty there.

36 Cliff Burgress, Perimeter Institute for Theoretical Physics, Department of Physics, McGill University

Hi, i had a good experience which i can relate.

I attended the BIRS workshop on string cosmology in June 2004, which was a very good meeting. At this meeting my collaborator, Fernando Quevedo from Cambridge University, was also present and we spoke about our work wherein we were able to find a particularly simple example of inflation within string theory, which we came to call "Racetrack" inflation. Andrei Linde and Renata Kallosh, from Stanford, were there and did not believe our solution was possible. (This was rather daunting because Andrei Linde is one of the inventors of inflation, and so has considerable experience with it.) They were skeptical because they'd tried themselves to do the same thing, and had not been successful. After lengthy discussions we were able to sit down in the BIRS kitchen with our laptops, and explicitly verify our solution to everyone's satisfaction. They then joined us, adding many valuable ideas, and we wrote a paper about this mechanism shortly thereafter. (the reference is JHEP 0411:063,2004 e-Print Archive: hep-th/0406230)

This is an example where the resolution of the disagreement was only possible because we were all together in an environment which was conducive for doing so. And this has been a very fruitful collaboration which only happened because of this exchange.

37 Pengfei Guan, McGill University

I am writing to support the continuation of funding for BIRS. BIRS is one of the best place to mathematicians together for exchanging of ideas in very front of mathematical research. It is a unique such setting in North America, it benefits the mathematical community in whole. I participated two BIRS workshops and organized one in past two years. It's great experience for me and for most of the participants of these two workshops. Neil Trudinger mentioned to me after a BIRS workshop to me that it's the most stimulating workshop he ever attended.

38 Bill Johnson, Department of Mathematics, Texas A&M University

BIRS is a fantastic resource and I hope that your application for renewal is successful.

It was useful for me to see at BIRS the great activity of the young researchers in convex geometry. The focus of my own research has shifted, but attending that one workshop brought me up to date on what is going on in convexity. This has help my direction of two current graduate students, one of whom is investigating a direction discussed at the BIRS workshop I attended.

39 Peter Russell, Department of Mathematics, McGill University

It is a pleasure to respond to your letter and heap some well deserved praise on BIRS. I came to Banff twice, first for a very successful five day workshop in the spring of 2003, and then this summer for the rather unique experience of participating in three weeks of focused research that brought together two researchers from Japan (Miyanishi, Masuda), one from India (Gurjar) and myself from Canada. We had prepared our meeting well, getting together beforehand in varying combinations at Osaka, Mumbai and Montreal, but it took the time in Banff and BIRS' congenial facilities, with all four of us away from the distractions of a home institution, to bring out the full power and pleasure that a period of intensive collaboration among exerts can provide. Our joint investigations raised as many questions as answers, and they are by no means finished, but a substantial manuscript coming out of them already is in the final stages of preparation. I doubt this work could now be at the stage it is without the opportunities provided by the research in teams program at BIRS. I am much looking forward to another opportunity to spend time at BIRS. With best wishes

40 William McGowen Priestley, Professor of Mathematics, University of the South

I participated in a BIRS seminar in creative writing in the sciences that was held in April, 2004, and found

it to be a wonderful experience.

At the time of the seminar I had completed the first draft of a paper entitled "Plato and Analysis", in which I considered the extent to which Plato might have been affected by Eudoxus' brilliant use of number to account for proportions in which ratios of incommensurable magnitudes may appear. Because the connection between Eudoxus' theory and Richard Dedekind's nineteenth-century theory of real numbers is well known, my paper has the effect of connecting some of Plato's ideas to those of nineteenth-century analysis. "Plato and Analysis" has since been accepted for publication by the Mathematical Intelligencer and should appear soon.

The comments about my first draft made by other participants in the seminar were of great help. In particular, I made the acquaintance of Jan Zwicky, who teaches Plato in Victoria and who furnished a valuable reference to me, making a connection between my topic and Plato's enigmatic "last lecture" on the Good. This was a surprising and valuable connection that I had not foreseen.

Chandler Davis, one of the co-organizers of the seminar, also gave me much sound advice and encouragement.

Another topic, that of mathematics and poetry, is one in which I am interested as an amateur, and on another occasion during our seminar I participated in an informative discussion about this. Having to prepare something to say about this topic to a group so knowledgeable in this area was a real challenge and a rewarding experience. It is possible that this might lead to another paper down the road.

I worked hard, I got a lot done at BIRS, and I enjoyed having my wife Mary, who is a botanist, accompany me. It was our third time to visit Banff, although our first at BIRS. We love Canada.

I am very grateful to BIRS for inviting me to such a beautiful and hospitable place.

41 Rene Carmona, Paul M. Wythes '55 Professor of Engineering and Finance Bendheim Center for Finance ORFE, Princeton University

I participated in two workshops organized at the Banff Research Center. I accepted the first invitation because the workshop was to celebrate the retirement of a good old friend (John Walsh) for whom I have a great admiration. I discovered Banff and the Research Station on that occasion. I was very impressed by the working conditions, the hospitality of the organizers, the stunning view, the beautiful weather (I understand this is not part of the package, but that was icing on the cake in that instance) and the SURREAL food. I am a gourmet snob, and I was amazed by the number of options and the quality of most of them. In terms of lodging, The accommodation is much better than what is offered in most math centers I have been, and except may be for the fact that I had to share a bathroom (some things become more difficult when we reach a certain age!!!) I was very happy with the living conditions. My only complain is the fact that Saturdays and Sundays are some of the most busy days in the workshop line-ups. I had to miss a couple of the talks I would have loved to hear, just because I do not want to go to conferences on these days.

But short of this minor inconvenience, my experience was very positive and I could not wait to be invited back. So I immediately accepted the invitation to participate in the math - finance workshop last June. And again, the local organizer was extremely nice and accommodating, the workshop ran smoothly, the afternoon hike was memorable, ... I got all the perks I expected. On the scientific side, the level of the conference was also of the highest level and ALL the talks were of high caliber: I did not miss any. The atmosphere at Banff is very relaxed and very conducive to discussion. I do not know if it is as easy in the winter, but I had ample opportunity to spend time with colleagues discussing research problems in informal settings at different times of the day, in different settings.

If I were in your shoes, I would not worry about people like me. I would be more concerned about the young participants. Do they have enough opportunity to interact with the speakers and the leaders in the field. Is the fact that the times of lunches and dinners are loose, and the fact that they are taken in a very large dinning room shared with many other groups a hindrance making it more difficult for young (potentially shy) people to mingle with the more senior (less inhibited) fellows. I did not have any problem, and I found the atmosphere of the dinning room very inviting. But did they?

The Banff Research Center is a good thing for the math community, and I am glad that it is in good hands.

42 Krzysztof Burdzy, Department of Mathematics, University of Washington

My participation in a conference at BIRS was a great opportunity for me to meet senior colleagues and junior mathematicians. I discussed mathematics with many of them and one result and one forthcoming paper have roots in these discussions. I talked with others about my own research and about problems that they presented in talks. BIRS offers incredibly good living conditions, with comfortable rooms and fast Internet access, and natural places to meet. The beauty of the surrounding mountains encourages walks, and these present an opportunity for informal discussions of professional matters. I hope very much that BIRS will continue its activities. It has an unquestionably positive and real impact on research of scientists who are able to participate in BIRS workshops.

43 James Propp, Mathematics Department, University of Wisconsin-Madison

The workshop on discrete probability that I attended in summer 2004 was a huge boost to my research on rotor-routers. Preparing a talk on the subject helped me sharpen my focus and identify good points of attack, and having Ander Holroyd around to collaborate with enabled me to solve some simple problems and develop basic techniques. Also, Yuval Peres helped me realize that rotor-routers aren't a mere curiosity (as I'd thought) but potentially part of a toolkit for derandomizing many discrete stochastic processes. I've recently written a grant-proposal to spend three years working out the details, and I am fairly confident of NSF giving me the funding I've requested; in any case, the proposal I submitted wouldn't have been nearly as well-developed or compelling if I hadn't participated in the BIRS workshop and benefited from the breadth of knowledge of colleagues and their technical assistance and friendly encouragement.

I should add that the backdrop of Banff is an integral part of the spur to creativity that the Centre provides. Much of the hard thinking that took place during my two weeks at BIRS took place while Ander and I were hiking, or while I was sitting on the banks of a lake, playing with some physical embodiments of rotors. The countryside surrounding Banff is a resource that no other research center in North America offers, and is part of what makes Banff such a special place.

44 Yasha Eliashberg, Department of Mathematics, Stanford University

I participated in, and even co-organized, a "hot topic" BIRS conference on Floer homology for 3-manifolds in November 2003. I think everybody, me including, liked very much the format of the conference, the setting and the way it was organized by BIRS' staff. The conference was very successful mathematically. As a result of the interaction during the conference a serious breakthrough in 3-dimensional topology had happen. What is important that it was not just a result of a progress in one of the participants' work, but it was a combination of small steps done by several people who otherwise do not regularly interact. I mean the development which led to the proof of Property P by Kronheimer-Mrowka and a conjecture of Milnor proved by Ozsvath-Szabo. I am happy that was able to contributed a small but essential brick to this building. I think that BIRS center is doing a very important job, which, I hope will successfully continue and develop.

45 Rene Schoof, Universiteit van Amsterdam

I had a wonderful stay at BIRS. The scientific level of the conference (on explicit number theory) was good and the organization of was very professional.

46 Neal Madras, FRSC, Chair, Department of Mathematics and Statistics, York University

I have attended two BIRS workshops: a 5-day workshop on mathematics of polymers in May 03, and a 2-day meeting of Chairs of Canadian Math Departments in Sept 03. Both were highly enjoyable. The 5-day workshop was particularly stimulating, one of the best I have ever attended. There was a concentration of people working on topics that I had been

working on (self-avoiding walks and related polymer models), which does not happen very often. There were also others working on related topics (e.g. knots in random polymers) which I had heard about elsewhere, but it was really at this meeting that I got a deeper understanding of the issues and relevance of these problems.

Although I was not an organizer, it is clear that having the BIRS structure in place allows the organizers to focus on the scientific content of the meeting rather than its organizational details. As an organizer of meetings at York, I can appreciate this tremendously.

47 Oliver Brock, Assistant Professor, Department of Computer Science, University of Massachusetts Amherst

I attended a workshop on the flexibility of proteins at BIRS this summer. This workshop was a truly enlightening experience. Problems in molecular biology are inherently inter-disciplinary and to gain true understanding requires knowledge biology, physics, chemistry, geometry, computer science. To make progress in such an interdisciplinary area, collaborations across departmental boundaries are absolutely essential. The workshop at BIRS created the opportunity to engage in such collaborations. I feel that BIRS plays and will continue to play an essential catalytic role in research in North America that cannot be otherwise fulfilled.

48 Lionel Mason, Reader in Mathematics, University of Oxford

I would like to say that the meeting that I attended in PIMS at the beginning of August on Conformal Geometry was extremely stimulating and has subsequently led to some important collaborations and new ideas in my research. I very much enjoyed the fertile environment and atmosphere and the seamless organisation that made this such a productive meeting for me.

49 Ian Agol, University of Illinois at Chicago

I participated in the BIRS workshop on low-dimensional topology in September 2003. Besides having some good talks which informed me of current topics that others are thinking about, a collaboration has ensued stemming from the talk I gave. I discussed some monotonicity formulae for the Ricci flow, and how this gave improved lower bounds on the volumes of hyperbolic 3-manifolds. Nathan Dunfield was at my talk, and after the meeting, he investigated my approach and found some improvements to get even better lower bounds. We will write a joint paper, but we aren't planning on submitting it until Perelman's work on geometrization has been checked to be fully correct, since the bounds depend strongly on Perelman's work. Also, we could check our volume estimates against data from the program Snappea, giving further validation to Perelman's work.

50 Jesse Barlow, Department of Computer science and Engineering, Pennsylvania State University

I spent one week at the Banff Center last year during the week of the American Thanksgiving. It was for a workshop on eigenvalue computation. I can honestly say that it was one of the most enjoyable professional weeks I have ever spent. I dearly hope that I am invited to spend such a week again in the near future.

51 Paul Gunnells, Mathematics Department, University of Massachusetts

I have participated in two BIRS Workshops:

(1) The many aspects of Mahler's measure, held April 26 - May 1, 2003 (2) Explicit methods in number theory, held November 13 - 18, 2004.

In both cases I found the workshops to be extremely stimulating, and highly informative. The facilities at BIRS were also excellent; with all our needs taken care of (food and lodging), there was ample time to discuss mathematics and interact socially with colleagues.

Both BIRS conferences had a significant impact on my own research. The Mahler conference introduced me to a branch of number theory I only knew a

little about, and gave me a chance to meet many new colleagues. The Explicit methods conference gave me a chance to hear of many recent developments in number theory. Perhaps the most concrete way that BIRS has affected my research is a publication that grew out of interactions at the Mahler conference, namely Lattice polytopes, Hecke operators, and the Ehrhart polynomial available at the mathematics archive:

http://arxiv.org/abs/math.CO/0405573

BIRS is gratefully acknowledged in the introduction.

I would really like to see BIRS expand its operation from 40 to 48 weeks during the year. The setting is ideal for mathematics conferences, and I look forward to attending and perhaps organizing BIRS workshops in the future.

52 Eric Cytrynbaum, Assistant Professor, Department of Mathematics, University of British Columbia

I was fortunate enough to be invited to one of the BIRS workshops last year (in honour of Lee Segel) and will be co-organizing one this coming summer with a few colleagues (on modeling in cell biology) and have the highest praise for the organization and venue. The meeting I attended was excellent both scientifically and in the "mundane" details - good accommodations and food, helpful staff - and ranks among the most enjoyable and fruitful meetings I attend (for example, I would compare it quite favourably to the Gordon Research Conferences I've attended). I am really looking forward to the meeting we are organizing this summer as it will be drawing an international crowd of experts from a wide range of fields offering a great opportunity for building interdisciplinary collaborations, a vital component of my (and many of the attendees') research. I am certainly glad that we have such a valuable resource available to us and have no doubt that our meeting this summer will reflect favourably, in the minds of our international attendees, on the research and research environment here in Canada.

53 Nora Ganter, Department of mathematics, Massachusetts Institute of Technology

I went to two workshops in Banff during the last 1 & 1/2 years: One was on "Intergration on arc spaces, elliptic genus and chiral de Rham comlex".

It gave me the opportunity to meet mathematicians with backgrounds that are very different from mine who are interested in the same field as I am, but for very different reasons and with very different points of view. I have kept in touch with many people whom I met for the first time in Banff, one has since become a collaborator.

The other conference I went to was on "Topology of manifolds and homotopy theory".

This conference, too, was a great conference and a good opportunity for scientific exchange with colleagues. Again I was able to make new contacts and to deepen existing ones.

54 John Labute, McGill University

I participated in a Research in Teams (Field Theory and Cohomology of Groups) at BIRS in May 2003 with Jan Minac and Dikran Karagueuzian. This was a marvellous experience with me as it opened up a whole new area of research for me but one which built on my previous experience. In addition, it started a fruitful collaboration with Jan Minac which has already yield interesting results in Galois Cohomology with more to come. The facilities at BIRS were just marvellous and very conducive for serious work. I hope to be able repeat the experience in the near future.

55 Dagan Karp, Department of Mathematics, University of British Columbia

BIRS has had a significant impact on my PhD thesis and current research program. At BIRS, I had valuable discussions with individuals that I would otherwise have not met. Those discussions opened new avenues for research and collaboration.

Let me elaborate. I was a participant at the Interaction of Gromov-Witten and Finite Type Invariants workshop in the fall of 2003. This workshop was also

attended by Chiu-Chu Liu of Harvard University and Marcus Marino of CERN. Through discussions, we learned that my PhD thesis in Gromov-Witten theory was related in an unexpected way to the theory of the so called topological vertex of Marino and his co-authors. The vertex was a physical theory, and Liu was in the process of developing a mathematical theory of the topological vertex.

In detail, in my thesis I compute the local Gromov-Witten invariants of configurations of rational curves in a Calabi-Yau threefold. These same invariants are conjecturally computed by the technology of the topological vertex, how ever it is not a priori clear how to do so.

My results raise interesting questions about the topological vertex, and the relationship between Gromov-Witten and Chern-Simons invariants that it encodes. Indeed, my current research involves trying to understand how the topological vertex accounts for the pattern shown in my thesis.

In light of this, it is not an overstatement to say that my involvement at BIRS has been central lead to developments which are central to my current research.

56 David Boyd, Department of Mathematics, University of British Columbia

I'm pleased to give a testimonial to the effectiveness of BIRS. I organized a BIRS workshop on Mahler's measure in April 2003 and I have just participated in another on Explicit methods in Number Theory in November 2004.

The Mahler measure workshop was very inspiring to my research. Vincent Maillot gave a lecture on generalizations of Deninger's cohomological interpretation of Mahler's measure. Inspired by this, my collaborator Fernando Rodriguez Villegas was able to make some conjectures about the values of some simple 4 and 5 dimensional Mahler measures, relating them to values at integers of certain modular forms. These results have been verified numerically to high accuracy but still remain conjectures. Following this up, he and I found a number of examples of 3 variable polynomials whose values we predicted should be expressible in terms of L-functions of elliptic curves evaluated at s = 3. These too have been verified to high accuracy and are challenging conjectures for future proof.

In the course of this, I found a three variable polynomial for which the elliptic curve of the previous examples degenerated to a rational curve, and so I predicted that the Mahler measure would be a rational multiple of $\frac{\zeta(3)}{\pi^2}$, where ζ is the Riemann zeta function. Numerical evaluation (not an easy calculation!) revealed that the rational number was 28/5 to 28 decimal places. This conjecture was proved by John Condon, a student of Fernando, and formed a major part of his PhD thesis. My own student Mat Rogers has recently simplified the argument by proving some new polylogarithm formulae of considerable interest. This seems likely to be the inspiration for his own PhD thesis.

So clearly this workshop generated a considerable amount of interesting research just from my own local perspective.

It is a bit too early to see what the salutary effects of the November workshop will be, but it has got me thinking about some interesting questions. There were some very inspiring talks especially by some of the young Dutch algebraic geometers.

The atmosphere of BIRS, both physical and intellectual is very conducive to opening up ones mind to new ideas. It was a great idea to start the Institute. I think it will have an extremely positive influence on the future of Canadian mathematics.

57 Xiaolin Li, AMS Department, SUNY at Stony Brook

Last year's workshop on moving interface problems is of great help to our research program. From this conference, we learnt how the level set people have tested their method on accuracy and reversibility of the moving interface. After coming back, we did the same test problem on the front tracking method. When we used the fourth order Runge-Kutta method, the front tracking showed much accurate result than the level set method.

We also learnt that the success of the level set method was due to its simplicity, but simplicity can be achieved through design of a easy code interface. This has been the work I have initiated after the Banff workshop.

The workshop was compact and interactive. I made very good friend and close contact with the people in the same field. It is a unforgettable academic experience.

By the way, our family also enjoyed a beautiful vacation after the conference. My son took many spectacular photos in the Canadian Rockies.

Thanks for the organizers and the invitation.

58 Uri Ascher, Department of Computer Science, University of British Columbia

I participated in a meeting on model reduction and numerical linear algebra last April and in a regional weekend-size meeting of numerical analysts this past September. Both meetings were highly successful, and I credit the BIRS operation for its high standards and efficiently run, first rate facilities. The meeting last April gave me the opportunity to learn a lot about an important area, model reduction, as well as interact with several colleagues on research questions related to linear algebra that arise in my work (I apply such techniques rather than center my research on them).

The regional meeting was by far the best PNWNAS meeting I have ever attended (and I have attended many). It seemed, I confess to my surprise, that my colleagues needed that extra time and remoteness of location to come out of their daily toils and share their interesting research projects in a more meaningful way.

I strongly support the continuation of funding for the BIRS facility. It clearly contributes a lot to the mathematical sciences scene in this country.

59 Michael Chen, IE Dept, Tech C230, Northwestern University

I attended the 6th PIMS Graduate student Math Camp at the Banff International Research Station in 2003. It was a very memorable experience. Our team worked on two industrial problems and gave satisfactory solutions. I made friends with my team members and they provided helps from time to time on my study and research.

60 Atul Narang, Chemical Engineering Department, University of Florida

I attended the BIRS workshop "Dynamics, control and computation in biochemical networks" held in August, 2003. It was by far the best workshop I have attended so far. Since I am modeler, it was particularly helpful to have a large number of experimentalists in the audience. Their input has been crucial in the subsequent direction of my work.

61 James Sethian, Professor of Mathematics, Department of Mathematics, University of California-Berkeley, Head, Mathematics Department, Lawrence Berkeley National Laboratory

I attended the BANFF workshop on Numerical Algorithms for Propagating Interfaces—August 2003. I've been to many workshops in this area over the years, but this one stands out: (1) The organizers did a wonderful job of selecting a wide range of techniques, applications, and speakers. The conference was free of the highly opinionated talks, and the focus was focussed on cooperation and the underlying mathematics. (2) I began conversations with two of the researchers whom I had not met before: perhaps these will come to fruition. (3) The large amount of time devoted to the talks, the free parts of the schedule where people could truly interact, made this unique.

This was a success.

62 Anand Pillay, Department of Mathematics, University of Illinois at Urbana

I found the March meeting at BIRS on model theory (which I was formally an organiser of) very enjoyable and also very useful. I managed (with collaborators who were at the meeting) to finish off the proof of a result we wanted, stimulated by various comments during the lectures.

63 Wayne Barrett, Department of Mathematics, Brigham Young University

I attended the BIRS workshop "Directions in Combinatorial Matrix Theory", which was held May 6-8, 2004. The following week I wrote to my colleague

Richard Brualdi, "For me the Banff conference was exceptional."

Besides hearing a dozen clear and very informative talks over the 1 1/2 day period, the conference contributed indirectly to the following publication:

Wayne Barrett, Hein van der Holst and Raphael Loewy, Graphs whose minimal rank is two, The Electronic journal of Linear Algebra, volume 11 (2004), pages 258-280.

The Monday after returning from the conference I sent a letter to the Editor of Journal of Combinatorial Theory B about a paper that R. Loewy and I had submitted. The letter began:

We are writing to enquire about the status of our paper, Graphs whose Minimal Rank is Two (JCTB File: 5109). As you will recall, we first sent you an enquiry be e-mail on March 5, and asked if you would be willing to contact the referee in our behalf. You have been looking into this for us.

Raphael Loewy and I were invited to attend a workshop, Directions in Combinatorial Matrix Theory, at the Banff International Research Station in Alberta last week. We were somewhat surprised that three of the speakers gave talks on the minimal rank of a class of matrices associated with a graph, and two others mentioned such problems; one of these explicitly mentioned our work, and others referred to it. This has made us even more anxious to reach a final resolution on the disposition of our paper.

The outcome of this letter was that on the following day we received from the Editor the name of the referee, Hein van der Holst, with whom we had never before corresponded. We collaborated by e-mail over a six month period and added many substantial results to the already existing paper; it was published electronically in November. I believe this is one of the top 3 or 4 papers that I have ever written. And the three of us have written and submitted one further paper also.

This may have happened without the Banff workshop or it may not have. The workshop gave the impetus to write the follow-up letter which got everything rolling. I will always remember that with appreciation.

64 Fei Xu, Associate Professor of Psychology & Canada Research Chair, Department of Psychology, University of British Columbia

I participated in a workshop at the Banff International Research Station in March 2004 and it was one of the most productive and inspiring professional experiences of my career. I arrived at the University of British Columbia as an associate professor of psychology in 2003, then I was invited to Banff for a workshop organized by Janet Werker and colleagues. We spent two days discussing statistical learning in infants and adults and issues on learning language in general. Banff provided an ideal environment for such intense workshop. The participants not only attended each other's talks but also many breakfast/lunch/dinner discussions which are lengthy and details, going much beyond a regular conference gathering. As a result of participating in this workshop, I have begun some research on learning in infancy in my laboratory at UBC. There is absolutely no doubt in my mind that the Banff International Research Station is a major locale for extremely productive workshops, conferences, and the development of international collaborations.

65 Congming Li, Department of Applied Math, University of Colorado

My experience at Banff was great.

The most beneficial part is the discussion with other researchers and fund mutual interest to work on problems. The setting gives us a lot of discussion time which is the greatest part of my Banff experience. I have started 2 research projects there and one is already bearing some interesting results. Banff is a place I wouldn't want to miss: I will go whenever invited.

66 Bernhard Lani-Wayda, Department of Mathematics, Justus-Liebig-Universitat Giessen

Visiting BIRS was an extremely pleasant experience for all participants. I cannot claim a direct connection between the conference and something as concrete as a subsequent research paper.

During the conference there were discussions on how to support the world-wide reputation of our area of interest (delay equations). This reputation is suffering partially from a lack of tradition, and partially from mass production of low-level papers.

The familiar atmosphere of the BIRS meeting supported very much the concrete manifestation of the collective will to improve this situation. In this context I was invited by Prof. Shui-Nee Chow (Georgia Institute of Technology, Atlanta) to a conference in Taiwan 2005, with the specific aim to present substantial mathematics from our field.

We all strongly hope that BIRS will continue its so far extremely positive development.

67 Mark L. Green, Director, Institute for Pure and Applied Mathematics

I was an organizer for a workshop at BIRS on Commutative Algebra, and also attended the workshop, staying around for a few more days to do some research in teams. Speaking as an institute director, I was very impressed with the BIRS operation–the facilities, the staff, the ease of email, the room for informal get-togethers, and the pleasantness of the lodging. Speaking as an organizer, things were made pretty easy for us, we received timely reminders of tasks that needed to be done, and were relieved of responsibility for the material organizaton of the workshop. Speaking as a participant, I found the experience quite valuable and my "team" did indeed make substantial progress on our project, which is in the process of being written up.

68 German Enciso, Rutgers, The State University of New Jersey

As a speaker of a conference at Banff this past August, I would be very happy to be able to contribute to your petition by describing my experience at the station. I don't know how to say this and sound honest at the same time, but it was one of the very best times I have had at a conference. This particular one (on quantitative biology) was very well organized and the talks were remarkably well prepared, but I have no doubt that the venue was key to its success.

The stunning surroundings and the excellent amenities gave many opportunities to talk to other people and start collaborations. I for one got to meet Leon Glass from Montreal, as well as a number of professors and postdocs from the US, and after the seminar I started a collaboration with Mattheu Louis at Rockefeller University.

I especially liked the fact that there were so many artists around: we got to talk for dinner and lunch many times together, and they provided a good contrast that brought us back to earth when the conversation was rather too technical (I believe that they enjoyed talking with us as well). The food by the way deserves a special mention: we commented back then that the restaurant gave the pleasure of being in an elegant restaurant, without any of the hassle for formality or the guilt.

I think that you have a beautiful country, and that you are doing a very good job of showing it. Thanks for the organization, I hope to have an opportunity to come back another time.

69 Gary Walsh, Department of Mathematics, University of Ottawa

My research is in Diophantine Analysis. I recently attended the workshop on Analytic Number Theory and Diophantine Approximation (Nov. 20-25, 2004).

This was an extraordinary experience, nothing that I have experienced before, as I have not had the opportunity to accept invitations to Oberwolfach due to conflicts, and my closest experiences were at MSRI, which is a completely different environment.

This environment was SO productive. I was able to spend so much time with 3 colleagues on our joint research projects, but at the same time become very familiar with other "hot" topics being pursued by others in my research (Diophantine Analysis) area,

in order to get detailed insight into the methods being employed, and the hurdles that stand in the way of these approaches. Moreover, I was able to similarly learn the latest important ideas and discoveries in Analytic Number Theory, but for me, this aspect was secondary.

I sincerely hope that there are further BIRS workshops in my research area, and that BIRS is able to maintain the same productive format (a few, but not too many, lectures each day, leaving ample time for participants to pursue common goals, and exchange methods and research ideas).

70 Thomas Coutelen,Department d'informatique et de recherche operationnalle, University of Montreal

First I want to thank you an all the MITACS organisation for the Banff workshop. It has been a great experience for me in several point of view: First, the variety of the subjects is a really good point in order to enlarge my point of view. The counter side may be that new collaboration may be harder to build. But this workshop was obviously oriented to security so that many collaboration probably born this week end. Then you gave me the opportunity to present my work for the first time so that I consider this experience as the beginning of my research career (I am still a MSc. student). I realize that day how hard I have to work in order to be believed and I realized how other topics may help me, even with subject quite far from my work.

At last if I was really impress to spend this time with so experienced people, everybody was respectful so that I have been charmed by this way of work.

To conclude, this experience made me aware that I really do want to continue to a research career what wasn't sure before.

71 Luca Daniel, Massachusetts Institute of Technology

Participating at one of the BIRS workshops has had very practical repercussions on my research career and on the impact of my contributions in other communities different from mine (computer aided design) such as applied math and the system theory communities. As one of the many tangible testimonials let me send you for instance part of an email I just received a week ago (that is 8 months after the workshop).

72 Leah Edelstein-Keshet, Department of Mathematics, University of British Columbia

It is with great pleasure and enthusiasm that I write to you to express my support for the Banff International Research Station (BIRS).

As you know, I was one of the co-organizers of a BIRS workshop in the summer of 2003 on Mathematical Biology, and the legacy of Lee Segel. This was one of the most wonderful scientific weeks in my entire research career. Let me explain why.

Our group of 40 consisted of a mixture of senior scientists who are at the pinnacle of this field (Simon Levin, George Oster, Alan Perelson, Gary Odell and others), together with bright young scientists, male and female, at the level of graduate students, post docs, and junior researchers. We attracted participation from international stars (Lee Segel, Paulien Hogeweg, Rob deBoer, Albert Godbeter, etc). The atmosphere was exceptionally pleasant, and days were spent in exciting talks, numerous informal discussion sessions at that were carried over to the dining hours, and which continued even outdoors. The level of scientific discussion was unparallelled! I saw an example of one research direction, involving the assumption of Glazier-Graner cellular Pott model that was dissected and shown to be incorrect from a Newtonian mechanics perspective. The discussion (which was intense and continued over two days) was carried out with the greatest respect and interest not as a hostile confrontation, but rather as a helpful revelation and deep interest in getting to the truth. This, alone, has changed the perspective of a number of young scientists working in the field of computational biology. There were several examples of this type. There were numerous examples of outstanding talks that were inspiring to us all. It is very rare to find scientific meetings in which such high caliber science is mixed so well with such congenial and intense interactions at all levels of seniority.

One reason for the high caliber of that meeting is the unique aspects of BIRS: the staff makes it easy for all of us to focus on science, rather than the administrative overhead of running the meeting. We had lots of help in advance of the meeting to finalize the list of participants and to get information and registration

material sent to them. On site, every detail Everything we needed was right there, and we had help with all technical aspects. We were very impressed by the exceptionally good on-site staff, and how well they treated us. No request was ignored.

The second reason is that BIRS is optimally organized for such meetings. It is just the right size (maximum of 40 participants), with the right level of comfort, and the perfect environment. Unlike a meeting at a university campus, there are few distractions or interruptions, and the group is cohesive. This makes for very good atmosphere.

I had a second opportunity to spend time at BIRS at a MITACS biomedical theme meeting about 1 year ago. We took up a number of researchers from my MITACS team and had some prime research time. We could really concentrate on making rapid progress on a number of collaborative projects in the few days that we spent there.

I got so much from these experiences that I have proposed (with other co-organisers) another BIRS workshop (on Cell Motility and the Cytoskeleton) for the summer of 2005. This meeting was approved and I look forward with great anticipation to another unique and intense 5-day BIRS experience.

Finally, it goes without saying that the environment of Banff, and the geographical setting is both inspiring and uplifting: our group spent great hours discussing science on walks in the surrounding area. Needless to say, I am a strong supported of this gem, and I think that it will put Canadian science on the international map.

73 Ezra Miller, School of Mathematics, University of Minnesota

I have attended two BIRS workshops:

1. Workshop 03w5005 on "Commutative algebra and geometry", March 29 - April 4, 2003

and

2. Workshop 03w5009 on "Recent advances in algebraic and enumerative combinatorics", May 3 - May 8, 2003.

For the first of these I was invited to give an hour-long talk on the topic of my choice. This presented me with a very timely opportunity. For a few years I had been working on an extended joint project with Allen Knutson (beginning with the paper 'Gröbner geometry of Schubert polynomials', Annals of Math, to appear) and sometimes also Mark Shimozono (see my comments on workshop number 2, below). This work had been for some time recognized as relevant to certain communities of algebraic geometers and other communities of combinatorialists. However, although the work was strongly grounded in commutative algebra, it was not until my BIRS visit that I had an opportunity to deliver a relaxed, expository-style lecture to a concentrated group of leaders in commutative algebra. As far as I can tell, the talk went over quite well, and it had the desired effect of engaging the commutative algebra community in our research program. The exposure afforded by my opportunity at BIRS was very helpful for my career, especially given that I was just a couple of years past my Ph.D. at the time. For example, I think it would be fair to guess that my experience at the BIRS workshop 03w5005 was a major factor in precipitating an invitation to deliver a four-lecture series on combinatorial commutative algebra to a large audience of international researchers at the International Center for Theoretical Physics (ICTP, Trieste) in June, 2004.

During the week of the second workshop listed above, I was finishing up a paper with Allen Knutson and Mark Shimozono entitled "Four positive formulae for type A quiver polynomials". The BIRS workshop 03w5009 was the FIRST TIME EVER that all three of us had been in the same room together. Our week at BIRS was therefore extremely valuable for that reason alone; but moreover, each of the three of us presented a part of the paper to the audience of distinguished combinatorialists there. We were able to announce, in full detail, the results, techniques, and ramifications of our substantial (by which I mean hefty: 76-page) article. We were also able to finish up the final bits of editing sufficiently to hand out preprints to interested audience members. The paper has since been submitted to Inventiones Math, and subsequent papers by other authors—of which there are at least half a dozen—include at least one that has appeared in the Journal of the American Math Society. A number of the ideas for this subsequent work were discussed during the workshop itself, and certainly the presence of all three authors facilitated these discussions.

Let me close by mentioning that the walks along the river and hikes into the mountains during both workshops were refreshing venues to mull over the mathematics being presented, and that after the May workshop, I spent a day skiing with a colleague in the vicinity of Banff—without question the best day of skiing I have ever experienced.

74 James Demmel, Department of Electrical Engineering and Computer Sciences, University of California-Berkeley

Your request for a testimonial arrived at an opportune time. I helped co-organize the "Theory and Numerics of Matrix Eigenvalue Problems" workshop from November 22 - 27, 2003. I'd like to mention one outcome in particular: I used the meeting to brainstorm with the other participants on what new eigenvalue algorithms were worth including in a potential new release of the widely used LAPACK and ScaLAPACK libraries. These libraries have been adopted by many computer and software vendors (Cray, IBM, HP, Intel, NEC, Mathworks (producers of Matlab), to name a few), and have 42 million web hits on their public web page, and so the impact of improving these libraries is large. Many of the participants had excellent suggestions (of their own and other algorithms). As a result, Jack Dongarra and I subsequently wrote a successful NSF proposal to get substantial funding to produce a new release of these libraries. Our first organizational meeting for the project is tomorrow, and I was planning it when your email arrived. In short, this BIRS workshop played a critical role in bringing together the leaders of the field to identify promising algorithms (including many which require further mathematical research to complete!) whose development and dissemination will have a very large benefit for a large fraction of the science and engineering community.

75 Ernest Schimmerling, Department of Mathematical Sciences, Carnegie Mellon University

I participated in the BIRS meeting on "singular cardinal combinatorics". It was one of the most exciting meetings that I have attended. I gave a talk about my results on "coherent sequences and threads". John Steel pointed out an extension of one of my theorems. Stevo Todorcevic made useful suggestions for how to get started on some of the open questions I'd posed in my talk. (I'm still working on these!) I'm sure that the paper I'm writing will be better because of this interaction.

The Banff Center is an amazing place in terms of its beautiful location and great facilities, but particularly in terms of its friendly helpful staff and careful planning. I really appreciated their help when the airline lost my luggage. And I like the idea of mixing up groups at dinner. Besides working on research with mathematical colleagues, I had memorable conversations with non-mathematicians, including an Argentinian sound engineer who helps artists realize projects, and a British choreographer who was running a workshop for a dance company from Calgary.

Hopefully I'll get invited to future BIRS workshops. I'd jump at the chance!

76 Stephanie van Willigenburg, Assistant Professor, University of British Columbia

I am writing to thank you for the opportunity to hold the 5 - day BIRS workshop on "Combinatorial Hopf Algebras" from August 28th - September 2nd 2004.

Combinatorial Hopf algebras lie at the junction between a variety of disciplines. Aside from combinatorics and algebra, it also arises naturally in computer science, physics, topology and geometry. The BIRS workshop gave these disparate groups a rare opportunity to meet, to exposit on the state of the art in their fields and to formulate research programs.

I, myself, was able to meet computer scientists such as Robert Grossman and physicists such as Ale Frabetti, whose outlook on the subject gave me new ideas on how to approach problems I was working on. In addition, I also had the pleasure of meeting some of the pioneers of the subject such as Jean-Louis Loday and Pierre Cartier, who were drawn to the meeting by the exclusive list of participants.

Moreover, I was able to begin two new research projects: The Hopf algebra of graphs with Richard Ehrenborg, and The structure of ribbon Schur functions with Louis Billera. In the latter project, we found the computing facilities at BIRS to be invaluable for generating data, from which we were able to prove a theorem before the meeting's end.

I thank you again for the opportunity to research at this outstanding facility.

77 Charles Radin, Professor of Mathematics, University of Texas at Austin

I understand that the Banff International Research Station is up for renewal. Since I have participated in two workshops - on Joint Dynamics in June 2003 and on Aperiodic Order in May 2004, and value the experience highly, I would like very much to support the application for renewal, at least with this note.

I have found the setting unusually conducive for research, both in the size and quality of the sets of participants, and in the physical facilities for formal presentation and for relaxed interchange. At the workshop on Joint Dynamics questions were raised which led to new results which I have submitted for publication - with acknowledgement to BIRS of course! And given this experience I will be an organizer of a workshop on Sphere Packing next May, and expect to participate in an FRG on Topological Methods next July. I certainly hope BIRS is renewed!

78 Nadrian C. Seeman, Professor of Chemistry, Margaret and Herman Sokol Chair in Chemistry, Department of Chemistry, New York University

It is a little early to describe papers that resulted from a workshop held in August, but the workshop was influential in my thinking about a new project which we are undertaking in collaboration with one of the workshop participants, Erik Winfree. I realized during the workshop, and as a consequence of the talks that I attended, that we could use a translocational version of a rotary DNA translational device (we had already developed), to record the history of a system. We are now beginning to make the translocational device, and expect to fuel it with molecules from one of Erik's systems so that we can record the history in a series of polymers.

I hope this is help in pointing out the importance of the BIRS workshop's influence on my research.

79 Barry Sanders, iCORE Professor of Quantum Information Science, University of Calgary

I participated in two workshops this year: a two-day workshop with the University of Alberta Theoretical Physics Institute and a five-day workshop on quantum computing. Both workshops were valuable for me. In the first workshop, I gave a talk and cemented a stronger relationship between my theoretical physics program at the University of Calgary and the spectrum of activities at the University of Alberta. I expect that this relationship will be formalized soon if, as expected, I will be made an affiliate of the University of Alberta's Institute for Theoretical Physics. The BIRS workshop was instrumental in establishing common interests.

The quantum computing workshop was quite valuable. It was focused on the mathematical and computer science aspects of quantum computing but afforded me with the opportunity to learn a lot from the speakers and from other participants who did not give talks. A postdoc in my group, Andrew Scott, had the opportunity to present our recent work and build an awareness of physics-related quantum information research to the audience of computer scientists and mathematicians, which helped them to appreciate our progress in quantum fingerprinting.

BIRS offers an important opportunity to meet and collaborate with mathematically-oriented researchers in a relaxed setting that is conducive to profound discourse. I certainly hope that BIRS continues, and I hope to participate in BIRS workshops in the years to come.

80 Michel Waldschmidt, Institut de Mathmatiques Thorie des Nombres

I suppose it is better I write in English. Also if you wish a more formal letter please tell me.

I participated to a meeting in BIRS last week. That was my first visit to Banff, and it was an excellent experience. The main point for me is that I spoke with Damien Roy of my recent research, and he gave me an advice which hopefully will enable me to solve a problem on which I was working for several months. This is really important for my wok, and it would not have happened with our regular discussion by e-mail.

We had other discussions together, which were also very interesting for me, and the lectures which I attended were all of high level. The organizers had planned a rather light scientific program (14 lectures for 4 days) and that was a very good idea: we had enough time to work together (that was a workshop) and as I said this was quite efficient.

This participation of mine to this meeting may have further consequences later, but I cannot tell yet since it took place only last week.

I wish to add that at the CIRM (Luminy) we did not succeed yet to receive enough support for the accommodation of all participants. This is a good point for BIRS, which makes it very much attractive!

Thanks!

81 Bob Guralnick, Professor of Mathematics, University of Southern California

I participated in the Galois Groups Workshop (the title may have been somewhat different, perhaps it was a focused research group) in September 2003. This was organized by David Harbater and Florian Pop. The setting and format with a small number of lecturers and lots of time to interact with the other participants was fantastic. The particular project that I was working on during that period was on lifting of automorphisms of curves from characteristic p to characteristic zero – this was a joint project with Harbater and Ted Chinburg (also a participant). Quite a lot of progress was made during the meeting. Moreover, several other participants made useful suggestions and pointed out useful items in the literature. Moreover, Bouw and Wewers (two other participants) have started working on a related problem and have produced some outstanding results.

BIRS is a wonderful resource for the general mathematical community and I think with the proper leadership and funding can take its place among the premier sites for mathematics (IAS, MSRI, Oberwolfach). It certainly is a great benefit to Canadian mathematics in particular.

It should be an easy decision to decide to continue supporting what is clearly growing into a wonderful institution.

82 Yiming Long, Vice President of Chinese Mathematical Society, Nankai Institute of Mathematics, Nankai University

It is my great pleasure to write this letter to strongly support the further development of the Banff International Research Station for Mathematical Innovation and Discovery (BIRS). It is my great honor to have had been invited to give a lecture and join the workshop, New developments on variational methods and their applications hold during May 15-20 of 2004 at BIRS organized by Kung-Ching Chang (Peking University), Jingyi Chen (University of British Columbia), Changfeng Gui (University of Connecticut), and Paul Rabinowitz (University of Wisconsin, Madison). About 40 experts come from all over the world joined this conference so that it is at the highest academic standard in the world. Invited speakers include winner of the US Medal of Sciences, Professor Louise Nirenberg, Birkhoff Prize winner Professor Paul Rabinowitz, many other famous mathematicians, and also many young active mathematicians. Among the participants, about 1/3 are come from universities in Canada. In the conference I also reported a very recent work which push forwarded the study on a conjecture proposed by H. Seifert in 1948 about the existence of multiple brake orbits. This conference is very successful and provides an excellent opportunity for mathematicians to communicate face to face to discuss their commonly interested problems. Such an activity certainly is very important on pushing forward the research in mathematics. During my stay in Banff, I felt that the Banff center has a very nice facility for carrying out academic activities. For these reasons, I believe that such a research base is very important for advancing mathematics in the world and in the north America, specially in Canada. I would strongly support the further development of the BIRS and hope that BIRS will become one of the most active and important center of mathematics in the world.

83 Justin Roberts, Department of Mathematics, University of California-San Diego

I attended the workshop on Gopakumar-Vafa invariants organised by Jim Bryan and Dave Auckly in November 2003. I thought this was an absolutely excellent meeting. The idea of bringing Marcos Marin o to speak about this new and exciting subject was a very good one, and I think it did a great service to the low-dimensional topology community to have a focussed workshop at which the ideas could be disseminated in this way. Personally I came to realise that this subject was very much related to what I had been thinking about for a long time, and it has influenced my subsequent work. It is very valuable indeed to have an "Oberwolfach-style" centre in North America, operating these kinds of specialised meetings with selected invitees. They are in general much more useful than the normal sorts of conference at which there may or may not be much in common between participants.

84 Ioannis Karatzas, Professor of Mathematics and Statistics, Columbia University

I am writing to express my very strong support for the proposal to renew the Banff International Research Station. This is an unparallelled facility for Mathematics, that can be compared only to the Oberwolfach Center in Germany. I had the good fortune to spend a week at the Banff Station during the summer of 2004, and recall very fondly the excellent organization of the meeting, the stimulating talks and informal discussions, the friendships that were made. I urge that the proposal for its renewal receive all the support you can command.

85 Akshay Venkatesh, Department of Mathematics, Massachusetts Institute of Technology

I attended the BIRS workshop on "Diophantine approximation and analytic number theory." This was a very exciting workshop for me that brought me up to date on some extremely interesting work by various groups in Europe with whom I was not in contact. Moreover, I had many extremely fruitful discussions with Paula Cohen, who explained many interesting questions connected to the Andre-Oort conjecture, at least some of which I think there is a chance of proving by ergodic methods. So it was an excellent conference; I also add that it provided an wonderful working environment, and I finished a paper with a co-author (also at the same conference) while there.

86 Toby Walsh, University of New South Wales, National ICT Australia

The Banff International Research Station is a world class resource. I was invited to attend a workshop there in May 2003. The workshop was attended my many of the leading researchers internationally in my area of operations research and computer science. The discussions went on till late at night and provided valuable input to some of my recent publications. In addition, I made some very valuable new contacts at the workshop, one of whom I visited earlier this year to discuss a possible international collaboration. I therefore have no hesitation in congratulating BIRS for starting so well and strongly and vigorously support its continued funding.

87 Eric Allender, Department of Computer Science, Rutgers University

I attended a BIRS workshop on Computational Complexity July 4-7, 2004. It was an excellent event; many of the top people in the field worldwide were in attendance, the facilities were very conducive to informal interaction, and there were lots of great lectures. Mike Saks and Toni Pitassi were also present, and our joint paper (together with Lisa Hellerstein) enti-

tled "On the Complexity of Finding Minimal Representations of Boolean Functions", grew largely out of discussions that we held there. (This paper is currently submitted for publication, it is available at my web page: http://www.cs.rutgers.edu/ allender/publications. I hope to have the opportunity to return to Banff for BIRS workshops again someday.

88 Yang Wang, Professor and Associate Chair, School of Mathematics, Georgia Institute of Technology

I strongly support the renewal of BIRS. I had participated two BIRS workshops in the past two years, and each time I found it extremely stimulating. More than any other conference, you meet your peers on a very personal level, which has helped me to maintain very productive collaboration with some of the people I have met at BIRS. During the workshop time we had a lot of free time to interact, whether it is discussing mathematics or simply taking a walk in the town of Banff. Opportunities like this do not exist often. I would be a shame if BIRS is not able to continue.

89 Klaus Mueller, Computer Science Department, Stony Brook University

I appreciate the BIRS effort very much. A similar effort (the only other one I know) exists in Germany with the Dagstuhl series. Although health reasons prevented me from coming to BIRS, when I was invited this year, I know that I find these kinds of gatherings of a select group of scientists extremely stimulating and beneficial to all. It is very different from a conference, where there is a usually a much broader intellectual mix of people and program composition. Meetings like BIRS enable participants to delve deeply into subject matters, fully exploring ind identifying the gist of the problems thanks to a debate among experts, whose different viewpoints and expertise provide the full picture needed to reach effective solutions. It's also great to build and deepen research connections useful for the future since the resort-like venue is very relaxing to all participants, eliminating the usual day-to-day schedule, stress, and routine. Going out, one feels as a part of a community.

90 Shigeo Koshitani, Department of Mathematics, Chiba University

This is Shigeo Koshitani (Chiba University, Japan) writing, who took part in a workshop "Current trends in representation theory of finite groups, October 25–30, 2003" taken place at the Banff International Research Station (BIRS).

First of all, let me confess that the workshop above was so successful and useful for my research in mathematics which is mainly on representation theory of finite groups. For instance, before I visited the BIRS, I had only a poor knowledge on representation theory of finite reductive groups and algebraic groups. However, at the workshop, I met several people who study on the area and who kindly introduced me many papers and nice books of the subject. Since then I have been trying to study it hard, and now I believe it works quite well.

Second of all, even in my major subject, which is on Broue's conjecture on representation theory of finite groups, I was informed many new informations and unpublished papers by other participants of the workshop at the BIRS. It has been helpful, of course, so much for my research, and because of them I could write a couple of papers on the subject which have been published or accepted already in a journal "Journal of Algebra".

Moreover, I was able to become acquainted with several people during the workshop, and I actually visited one of them in Germany this year. This has given a so nice effect for my research.

Anyhow, I really appreciate that I was able to attend the workshop above, and therefore I am grateful to the BIRS so much.

91 Sergei Gukov, Department of Physics, Harvard University

It is my pleasure to reply to this letter and acknowledge the hospitality of the Banff International Research Station. I had a great and productive time at the workshop "Recent Developments in String Theory" in March 2003. The stimulating atmosphere of the workshop and the high level of scientific interaction make BIRS one of the best research stations in the World.

92 Leslie Hogben, Department of Mathematics, Iowa State University

I wish to express my strong support for the Banff International Research Station (BIRS). I participated in the workshop Directions in Combinatorial Matrix Theory held there May 6-8, 2004. This was one of the best scientific gatherings I have ever attended. The talks were outstanding and open problem sessions were even better. The setting provided by BIRS is ideal, with all participants in the same building in a very pleasant setting, with time to visit informally as well as to attend presentations.

I have submitted a paper to the Electronic Journal of Linear Algebra, "Spectral Graph Theory and the Inverse Eigenvalue Problem of a Graph," that is the result of my participation in this workshop. Some of the work was done in preparation for the workshop and the some as a result of issues raised there.

As a result of seeing relationships between some of the talks at the workshop, I organized a minisymposium, "Spectral Properties of Families of Matrices described by Patterns or Graphs," to be held at the 12th meeting of the International Linear Algebra Society to be held in Regina, Canada in June 2005. This minisymposium features 7 speakers from Canada, Israel, the Netherlands, and the USA.

I now have two new possible collaborators, who will be making separate research visits to Iowa State (one next week and one in January). These visits are the direct result of the ability to chat with colleagues informally. Needless to say, I also used the time at BIRS to reconnect with colleagues I had worked with previously.

I sincerely hope that BIRS will continue to be able to offer such wonderful opportunities to mathematical researchers in the future.

93 Qingguo Li, Simon Fraser University

It has been a great experience for me, and we have learned a lot from the workshop and summer camp.

94 Pauline van den Driessche, University of Victoria

I have just returned from a workshop on Mathematical Models for Biological Invasions at BIRS. This workshop was a great success with discussion between mathematicians and quantitative biologists on current problems. As one of the organisers, I was very pleased with the depth of discussion and the number of contacts that were made at the workshop. Some participants said that it had given them a whole new dimension to their research, and I believe that collaborative papers will result from this workshop. In fact, participants generated a list of open questions to take home and work on. In the summer I helped to organise a summer school and workshop on mathematical epidemiology at BIRS. This proved very successful, and I know from comments of my two Master's students who attended that it really made a difference to their understanding of the subject. Also they worked in teams on projects, and this gave them a new and valuable experience. Our MITACS group was responsible for this summer school, and we had previously held a MITACS group weekend meeting at BIRS. At this meeting our group had some very valuable discussions and working sessions, and these have led to collaborative work on models for SARS and West Nile virus. One SARS paper by this group is recently published: A. Gumel et al, Modelling strategies for controlling SARS outbreaks. Proc Roy Soc B 271 (2004): 2223-2232. The BIRS site is excellent and helps facilitates interaction of participants.

95 Sam Buss, Professor of Mathematics and Computer Science, University of California-San Diego

I participated in two conferences recently, one in Vancouver, one at Banff. (PIMS vs BIRS, the distinction is unclear to me).

The Vancouver meeting was a very stimulating meeting. It was devoted to E. Nelson's research and for this meeting I wrote what started out as a survey and ended up containing also several new results. As a result of contacts at the meeting, especially with Ed Nelson and William Faris, I was also prompted to write a new formulation of foundational definition of mathematics. This has lead to an article, still in preparation, that would not have been written without the meeting.

The Banff meeting concerned complexity. It had a strong roster of stimulating and exciting talks. For me personally it was invaluable since it exposed me to some of the research that has come up in the past year in complexity theory. In addition, a group of

five computer science graduate students from Toronto gave 20 minutes talks each on their work. Their work is very close to my own and it was a great way for me to learn about their work. One of the five is now visiting my own institution (UCSD) for the year.

Both conference venues were outstanding. The Vancouver campus is very pleasant and friendly. The Banff site is absolutely stunning.

(Please feel free to use any portions of this you wish, or to extract portions selectively.)

96 Steve Krantz, Mathematics Department, Washington University in St. Louis

My experience in the "Research in Teams" program last Summer was one of the best of my career. We actually wrote a very good paper ¡¡while we were in Banff¿¿.

I found the facilities to be delightful, the food very good, the staff to be the height of cooperation and good cheer, and of course the surroundings are divine.

I cannot wait to return. I'm invited to an event next Spring and I really look forward to it.

97 Joel Horowitz, Northwestern University

I attended a conference at BIRS on regularization methods in statistics. I thought it was a very stimulating conference, met interesting new people, and learned a lot. The papers that were presented gave me several ideas for new research projects. That doesn't happen at most conferences I attend, so I rate the one at BIRS a big success.

98 Eknath Ghate, School of Mathematics, TIFR, Mumbai, India

I have been to BIRS once, for the workshop on Mahler Measures in mid 2003, organized by Prof. David Boyd and others.

I'd like to put on record that I found my visit extremely useful. I was able to interact with a wide variety of people, and learn about the latest developments in the area. My connections from this conference have allowed me to stay in touch with people who are active in this field.

I also found the facilities at BIRS of a very high standard - the rooms were comfortable, the food great etc. and even with jet lag I had a very pleasant one week stay.

I wish you all the luck in your future endeavours.

99 Scott Aaronson, Postdoc, IAS, Princeton

I've attended the BIRS Quantum Algorithms and Complexity workshop three times, in 2002, 2003, and 2004. I've found it a stimulating experience in many ways; as an example, two of the three meetings led directly to new research papers. At the first meeting, I gave a talk in which I asked whether quantum computers can provide any speedup for searching a physical region of space, where the main constraint is the finitude of the speed of light. I conjectured that the answer is no. Within about two minutes, Andris Ambainis, who was in the audience, had disproved my conjecture. We ended up developing his idea into a paper on quantum algorithms for spatial search [1], which led to further papers by Childs and Goldstone and by Ambainis, Kempe, and Rivosh. At the second meeting, I told Harry Buhrman (another participant) about a problem I was working on: to give evidence that quantum advice is more useful than classical advice, by proving a relativized separation between the complexity classes BQP/poly and BQP/qpoly. Harry asked why we couldn't just prove an *unrelativized* separation. I'd never considered that before, but by midnight or so, I could prove to Harry that it was impossible with current techniques, since any problem solvable in quantum polynomial time with polynomial-size quantum advice, is also solvable in classical exponential time with polynomial-size classical advice. This result became the basis of [2]. (We were up at midnight because there was an aurora borealis.)

[1] S. Aaronson and A. Ambainis. Quantum search of spatial regions, to appear in Theory of Computing. Conference version in Proceedings of IEEE FOCS 2003, pp. 200-209. quant-ph/0303041.

[2] S. Aaronson. Limitations of quantum advice and one-way communication, to appear in Theory of Computing. Conference version in Proceedings of IEEE Conference on Computational Complexity 2004, pp. 320-332. quant-ph/0402095.

100 Chi-Kun Lin, Department of Mathematics, National Cheng Kung University

Thanks for the mail. I attended the inverse problem workshop in 2003 and the team study of kinetic theory and multiple-scale analysis. The BIRS afford a wonderful place to gather the outstanding mathematicians to share and communicate the new idea. Besides the new knowledge, it also give a friendly and stimulating environment that mathematicians can focus thinking some important problems. I really appreciate and really hope to go back to BIRS again.

101 Remco van der Hofstad, Technische Universiteit Eindhoven

I participated in the BIRS workshop on 'Stochastic Partial Differential Equations' in September 27- October 2, 2003. This was a wonderful experience. The topic is slightly off my usual area of research, and i was very nice to receive an excellent overview of the field. Without this workshop, this would have been much harder.

Furthermore, as a result of the above workshop, I started talking to Vlada Limit (Mathematics, UBC), and we are currently working on a project to apply the lace expansion to edge-reinforced random walks where there is a preferred direction on the basis of these discussions. We hope to complete this project somewhere next year, and we are very grateful to BIRS for providing us with the opportunity to start this up.

Needles to say, BIRS is an excellent place for workshops. Since the surroundings are so spectacular and the workshops are very high quality, almost all participants agree to come. This makes sure that the workshops remain to be of excellent quality. Also, personally, I found the mix between the arts and mathematics quite interesting. At dinner, the participants were typically mixed with artists participating in different workshops or sabbatical, and it was very stimulating to talk to them!

I will come to BIRS again in May-June 2005, and already look forward to this opportunity!

102 Jacques Liandrat, LATP, EGIM, University Aix Marseille 2

As an happy coincidence I received today your mail and a mail of acceptance of a paper in ACHA. This paper was triggered by a discussion I had with Peter Oswald in BIRS during a very nice workshop in spring 2003. I can also certify that the workshop in Banff was exactly of the right size and pace to be productive in term of research. The only place I know that can be compared to Banff is Oberwolfach but, to tell you the truth, I prefer Banff!

103 Marcus Spradlin, Assistant Research Physicist, Kavli Institute for Theoretical Physics

I participated in the String Field Theory Camp (a Focused Research Group) in July 2004 and found it to be a very rewarding experience. I have attended three other similar workshops, one in the US and two in Europe, but my visit to Banff was by far the most productive. In my opinion, the BIRS provides the ideal work environment, free from distractions and with all necessities conveniently at hand. I was particularly impressed, upon first entering my room, to find a Sunray computer terminal instead of a television. During my one-week stay I was able to make significant progress on a paper I had just started working on with Anastasia Volovich, another participant in the Group. Furthermore, overlapping interests led soon after the completion of the workshop to a collaboration with Mark Van Raamsdonk (one of the organizers of the String Field Theory Camp) on another paper.

104 Peter Topping, University of Warwick

Here are some comments from my perspective as a young European mathematician. I attend conferences at Oberwolfach once per year on average and this is a great place to meet European colleagues and the occasional north American. Of the many differences between Banff and Oberwolfach, I noticed at the "perspectives in differential geometry" meeting that there were many more senior north American participants with whom I would normally meet

up less regularly than I would like. (Tian, Schoen, Bryant, and many others....) I look forward to coming again.

105 Felix N. Bchi, Head Fuel Cell Systems, Laboratory for Electrochemistry, Paul Scherrer Institut

I had the pleasure to take part in the Fuel Cells Dynamics II Workshop at BIRS in 2003. For me this was a rewarding experience, because the relaxing atmosphere, the common meals, and excellent housing at Corbett Hall at BIRS allowed for many important personal contacts away from the stress of the everyday business.

I would strongly support the continued operation of BIRS. Due to my good experiences in 2003, I will come back for a another workshop in 2005.

106 Will Turner, University of Bristol

I found the recent BIRS workshop on Finite Dimensional algebras very interesting and useful. It brought to my attention a number of ideas on preprojective algebras, coinvariant algebras, and algebraic groups, of which I had not been aware. I am bringing some of these notions into my own work, and writing a paper about it, entitled "On seven families of algebras".

107 Chris Budd, Director of BICS, University of Bath

I am delighted to be able to write in support of BIRS. I spent an excellent week at BIRS last year at a workshop on level set methods. I have been to many conference centres around the world and I think that BIRS is the best by a considerable margin. The facilities were excellent, the staff very helpful, and the excellent food and social activities greatly helped the group work together. As a result I accomplished a great deal in the week and the ideas generated led directly to a PhD project. The location is stunning and I found BIRS easy to get to. I would also like to say that I think that the idea of having a large number of high quality week long meetings is an excellent one. Other research centres have opted for having much longer periods of concentration. These are much harder to go to and are much less focused. The week long model is much better. As director of the Bath Institute for Complex Systems (BICS) I am looking forward to close interactions with BIRS in the future and very much hope that we can organise some joint events together.

108 Ivan Todorov, Department of Pure Mathematics, Queen's University Belfast

I participated in one of the 5 days workshops at Banff in December 2003. It was an extremely useful conference for my research and carrier since it brought together the world leading experts in the area (Operator Algebras). Being at the initial stage of my carrier, it was very important to me to be able to speak about my results to such an audience. Discussions with a number of participants lead to widening my research horizon and bringing up a number of new problems to work on. I should mention the relaxed atmosphere, the efficiency of the staff and the particularly nice geographical setting of the research station. I hope that adequate financial support for Banff will be found so that it can continue his mission for the benefit of the scientific community.

109 Nick Higham, School of Mathematics, University of Manchester

During my Nov 03 workshop http://www.pims.math.ca/birs/workshops/2003/03w5008/ I found out that a US colleague (who I already knew) was on sabbatical and was interested in visiting me. We discussed research plans and subsequently wrote a proposal for an EPSRC Visiting Fellowship for him to visit the Univ M/cr in 2004. That was funded and I was able to augment the support with locally obtained funding.

None of this would have happened had we not been (a) physically at the same location (b) in a relaxed workshop environment with time to discuss plans and ideas.

Furthermore, the workshop proved an excellent time to advance ongoing joint work with two other US colleagues - again a normal conference would not have been nearly so good.

110 Fernando Quevedo, Department of Applied Mathematics & Theoretical Physics, University of Cambridge

I participated at a string cosmology workshop in BIRS in early summer. It was a wonderful experience. Besides the excellent set up (beautiful landscape, computer in the room, good quality and easy access food, etc.), our workshop ran very well. The place allowed for a very informal workshop with plenty of time for discussions.

There we had a very good experience, starting a successful collaboration with C.P. Burgess, J. Cline, R. Kallosh and A. Linde that ended up in what we consider a very nice article titled 'racetrack inflation' which is a novel way of getting cosmological inflation in string theory.

111 Wolfgang Dahmen, Institut fr Geometrie und Praktische Mathematik, RWTH Aachen

I have attended a BIRS workshop on computational Harmonic Analysis and Nonlinear Approximation in 2003. I have enjoyed very much the stimulating atmosphere and the nice infrastructure which I found very supportive of informal collaborations. For me it was a good opportunity to continue ongoing work with at least two other participants on adaptive an nonlinear solution methods for variational problems.

112 Enrico Rettore, University of Padova

I have participated in a workshop at BIRS on the use of the Regression Discontinuity Design in Economics, May 15-17 2003. Great place, great workshop! A small group of applied economists and econometricians - indeed, a large fraction of those drawing the line in this research field - participated in the workshop making it extremely stimulating. We had several comments on the paper we presented both during and after the workshop which have been of major relevance to improve it. Eventually, we had the paper accepted for publication in the Journal of Econometrics. I also want to add a word to stress how much I found the accommodation comfortable and the surroundings peaceful. Definitely, a trip (from Italy!) worth its cost.

113 Sylvain Sardy, EPFL, Swiss Federal Institute of Technology

I greatly enjoyed a workshop held on September 6-11, 2003 at BIRS that gathered a panel of researchers that would have been difficult to put in the same place at the same time without that conference. The two organizers, Dr. Ivan Mizera and Dr. Roger Koenker, did a great job selecting these people with whom it became easy to talk, discuss research projects, and exchange ideas. Among the most fruitful outcome of the BIRS conference, I would like to mention a paper on total variation I submitted a month ago in an American statistical journal. I was also personally impressed by the Canadian hospitality.

I therefore strongly hope conferences at the BIRS will continue to operate as well as they have done in the past for a great future of international scientific collaborations.

114 Brigitte Verdonk, Universiteit Antwerpen

The workshop at BIRS has given me the opportunity to meet and interact with many top specialists in the field of model reduction, it has given me the opportunity to obtain a more global view on and at the same time more thorough understanding of the most recent algorithms. This better understanding is essential in some of the current and future projects that I take part in.

Wishing you a successful continuation of BIRS!

115 Preda Mihailescu, University of Paderborn

I have spent a 5 days period of time for a workshop in Banff, having the occasion to meet in one (lovely and well entertained) spot, specialists from my larger area of interest, from all over the world, some of which I did know, others yet not. The conditions of the Banff center are in addition marvellous, allowing one to concentrate on work and scientific contacts, while having at the length of hand opportunities to relax - as a natural compensation for the fruitful work done.

I met new very interesting specialists in Banff and this pushed my work ahead - I am certain it will materialize in some new papers which might have taken much longer to mature otherwise. I thank Banff!

116 Geert Verstraeten, Ghent University

Last year, I attended the BANFF Credit Risk Conference 2003, and found it an extremely useful learning opportunity. I had just completed the 2nd year as a doctoral student in Marketing, and had recently performed a study on Credit Scoring. Hence, I was a freshman in the domain, and considering my recent study, I was eager to receive remarks on this study from the domain experts, who were almost unanimously present at the Conference. I had the opportunity to present my study during a full hour, and the most respected authority in the domain of my study - who had published a similar paper using a different methodology - was to present his comments during the next half hour, and this was followed by a general discussion. The remarks I received were extremely useful, and the discussion was so useful to my research, that I was able to revise my paper and submit it to JORS (Journal of the Operational Research Society). After one minor review, the paper was accepted for publication and I seriously doubt that this would have been the outcome without the fruitful remarks and experience I received at the Conference in BANFF. To me, this conference was of great value!

117 Christine Lescop, Director of Research at CNRS

My stay at the Banff International Research Station was a very pleasant opportunity of meeting people working in North America I had never met before and to learn about many of their interesting results on the braid groups and the mapping class groups. I also appreciated sharing viewpoints on configuration space integrals in low-dimensional topology. This was also an important opportunity of tighten links with researchers from Japan and North America. This was a very interesting and stimulating workshop.

118 Kurusch Ebrahimi-Fard, University of Bonn

I am very glad about the fortune I had to come to BIRS last August. This visit was most fruitful to my career. Beside the fact that I could enjoy this tremendous beautiful surrounding area at Banff, the discussions I had at BIRS together with my collaborator Prof. Guo gave rise to another (pre-) publication we just finished. Furthermore, at BIRS I had the chance to meet many interesting senior researchers. This always makes a significant difference in a young researcher's life.

THANK YOU VERY MUCH FOR THE INVITATION!

119 Karl-Hermann Neeb, Fachbereich Mathematik, Technische,Universitt Darmstadt

It's a pleasure to write that I've taken part in a BIRS workshop in early September 2003, and it was a very stimulating experience. The topic of the workshop was "Locally finite Lie algebras", and the purpose of the workshop was to gather people from all over the world who are presently involved in this very active branch of the structure and representation theory of infinite dimensional Lie algebras. I have profited from the workshop on several levels:

1) The survey lectures on the state of the art on many problems in the field provided a very good overview of the whole subject.

2) I have met several people working on topics very close to my own research, and stimulated by that I started a project with Ivan Penkov on Cartan subalgebras of infinite-dimensional Lie algebras. The outcome was a paper that is already published in the Can. Math. Bulletin. We are now working on a sequel to this paper.

3) I had the opportunity to meet other leading researchers in the field, and we discussed plans for further workshops and meeting. This resulted in particular in an Oberwolfach conference that I am organizing with V. Kac and A. Pianzola in December 2006. It goes without saying that the BIRS workshop are a very nice and useful complement to the Oberwolfach workshops in Germany.

120 Janssen, dr.ir. A.J.E.M., Philips Research Laboratories

I visited the BIRS workshop: Applicable Harmonic Analysis, June 7-12, 2003. The emphasis was pretty

much on wavelet based algorithms for representation and compression with a strong group of practitioners of this subfield of Harmonic Analysis. My interest is more in Gabor analysis, and some more attendees in that field would have been better for me. However, I fully recognize the potential for intensive and informal discussions, this being guaranteed by having the participants together all the time. You should expect very positive reactions of the sort you are looking for from the subgroup I just identified.

121 Anne Siegel, IRISA

I has the privilege to participate to a workshop at Banff institute in June 2004 (aperiodic order) and I would like to mention that this workshop was a pure pleasure from my point a view. It gave me the opportunity to have contact with north-American researchers that I had never meet before. It also gave me the opportunity to understand the deep connections that exist between my own research interest (representation of substitutive dynamical systems) and quasi-cristals. I hope that this will lead to papers next year.

122 Matthias Kreck, University of Heidelberg

During the time when I was the director of the Oberwolfach institute, I already wrote a supporting letter for BIRS. It was a great pleasure for me to participate in a workshop at BIRS and to see that the hopes expressed in my letter were all realized. I found the meeting very stimulating. Of course, being an older mathematician, I knew the majority of participants, but I also met some young mathematicians, some of which impressed me a lot. I found the lectures very stimulating. As a result of this workshop, various new ideas came up some of which entered into my present research.

I hope very much that BIRS will continue its extremely useful activities.

123 Daan Krammer, University of Warwick

I attended the BIRS workshop Braid Groups and Applications, October 16-21, 2004.

I came with no plans to give a talk, but I did give a talk after people expressed their interest in my recent results. This fact and the audience's response to my talk have greatly encouraged me to write a paper about the topic of my Banff talk.

Most of all I have made connections with some colleagues which may help me get a job which I will prefer over my present one.

For these reasons, the workshop has been one of the most fruitful ones for me so far.

124 Eugene Ferapontov, Department of Mathematical Sciences, Loughborough University

I have visited BIRS in the summer of 2003, attending the workshop on Differential invariants and invariant differential equations. This gave me an excellent opportunity to report my recent results on geometry of multi-dimensional dispersionless PDEs and to talk to such experts in the area as Prof. Bryant, Olver, Kamran and many others. Some of the contacts established during this visit have been extremely helpful over the past two years.

BIRS is a stimulating place for exchange of ideas and research in pure and applied mathematics, staying in one row with such internationally recognized centers as Oberwolfach in Germany, CIRM in France, Isaak Newton Institute in the UK, etc.

I feel that it is extremely important to support the activities of BIRS at all levels, and wish all success to its future programmes.

125 Aldo Conca, University of Genova, Italy

I attended one meeting at the BIRS in 2003, the meeting on Commutative Algebra and Geometry 03/29 to 04/03.

It was a very stimulating experience. It gave me the opportunity to discuss mathematics with some of the world leaders of the field as well as meeting some of the young talents. At the meeting I met S.Hosten (San Francisco State University). After a long discussion on the possible initial ideals of some kind of toric ideals we started a project , which involves also other colleagues, which is still in progress. I really enjoyed the atmosphere, the organization and the location of the research station.

Thanks again for the invitation.

126 Franziska Heinloth (formerly Bittner), Universitat Duisburg-Essen

I participated in the BIRS workshop "Integration on Arc Spaces, Elliptic Genus and Chiral de Rham Complex". It was extremely useful for me to get together with most of the "motivic integration people", to get to know what they are working on and what are the new results. Especially I learned about a result which is very close to what I had been working on at that moment, that saved me a lot of time. As I am a beginning mathematician, the workshop was of course also a good opportunity to present my own work. In addition, the BIRS is really a stimulating place, at a very beautiful location.

127 Wilhelm Winter, Universitt Munster

I participated at the workshop on 'Amenable Systems', October 30th - November 4th 2004.

The workshop provided an excellent opportunity not only to meet with my collaborator A. Toms, but also to discuss and present some of our joint work on strongly self-absorbing C*-algebras to other mathematicians. The said project is still in progress and it benefited immediately from numerous very helpful comments of and discussions with other participants.

Also, I had very stimulating discussions with N. Brown and P. Ng on a certain problem related to the classification of amenable C*-algebras. Initiated by the discussions during the workshop, I could give a partial solution only two weeks later, and there is a good chance that it can be solved completely in the near future.

Overall, the workshop was an excellent scientific experience, which contributed to the development of the whole area as well as to my personal research projects.

A more detailed account of my joint work work with Toms and of the mentioned problem (with precise statements) can be found in the report I submitted to the organizers of the workshop; I attach a copy as a .pdf file.

128 Ronald de Wolf, CWI Amsterdam

I have attended 2 BIRS meetings on quantum computation, one in 2002 and one in 2003. These workshops were probably the most interesting scientific meetings I attended those years, due both to the excellent BIRS environment and the excellent selection of invited researchers. I can think of one, maybe two, papers of mine that originated in these workshops.

129 Balazs Szendroi, Department of Mathematics, Utrecht University, The Netherlands

I participated at the workshop Calabi–Yau Varieties and Mirror Symmetry in Dec 2003. In general, I found the atmosphere of Banff Research Station extremely conducive to creative work: beautiful surroundings, ideal conditions, and lots of time to discuss and think. The conference was useful in picking up on the latest work in the subject, especially by Canadian and American colleagues who I meet less often. I gave a talk on "Calabi–Yau varieties in weighted homogeneous spaces", which was followed by a lively and beneficial discussion; I was pointed to some relevant references, and there ensued a long conversation with another participant, Prof. Todorov, on a possible direction to extend my results. Although this has not yet lead to any breakthrough since, the outcome of this discussion is one of the directions I pursued in my research over the next summer.

I wholeheartedly support extension of the financial arrangements ensuring the existence of BIRS as an ideal mathematics conference facility.

130 Dorit Aharonov, Hebrew University of Jerusalem

I would like to testify that the program at Banff I participated in was very fruitful for my research, and very inspiring. The lectures and the discussions have stimulated new ideas - though none of these has developed into a new result yet, I certainly intend to work on some of these ideas in the future. I found it one of the more fruitful and inspiring environments for research I have experienced.

I truly hope to participate in one of the Banff conferences in the near future.

131 Bjorn Ian Dundas, Department of Mathematics, University of Bergen

I participated in a workshop at BIRS this spring (03-20 03-25 04w5533 Topology of Manifolds and Homotopy Theory).

The workshop was very inspiring. The timeliness of the conference was clearly felt. Many of the main actors of e.g. surgery theory participated and there was a lively interplay between senior and younger mathematicians. The facilities at BIRS were excellent and the arrangement a success in every way. In addition to the more formal lectures, the mathematics flowed freely also during the short trips in the gorgeous scenery during the lunch break. Important new contacts with recent PhDs were made. I particularly want to commend the organizers for their relaxed and successful problems session in the evening.

On the practical side, having a Sun-Ray in every room made it easy to pursue active research while at BIRS, and preprint servers and MathSciNet were opened frequently during the evenings inspired by talks given earlier in the day.

132 Genkai Zhang, Chalmers University of Technology and Gothenburg University, Sweden

This is to testify that I have attended a workshop at BIRS in 2004 and that I have benefited very much from the workshop. BIRS has provided a very stimulating environment and has brought together some world leading experts in the the related areas. During the workshop I have been able to discuss my research problems with quite a number of experts and to understand the related areas, and it has led to consider some further interesting research problems. I hope that BIRS will continue its scientific activities and I express my full support.

133 Christian Berg, Department of Mathematics, Universitetsparken 5, Denmark

I found my stay most stimulating and I include below a report I sent to the organizers shortly after the meeting in April 2004:

— Report on the meeting in Banff, March 27-April 1, 2004

My talk on 'Orthogonal Polynomials associated to positive definite matrices' focused on several new characterizations of indeterminate moment problems in terms of Hankel matrices. This raised the question of how this was related to Riemann-Hilbert problems and brought me in contact with Ken McLaughlin. He had treated asymptotic questions for weights of the form $w(x) = exp(-|x|^a)$, which for $0 < a < 1$ corresponds to indeterminate moment problems. He did not know about the problems of determining the order of the entire functions in the Nevanlinna matrices for these problems, and one can hope that this can be done by Riemann-Hilbert methods.

In the talk by Natig Atakishiev was presented some duality results for certain systems of q-orthogonal polynomials. To several people in the audience it was felt that one needed a precise notion of duality in this area, and after several hours of discussions and thoughts I think that he and I have reached such a notion and this could lead to a joint paper.

Jeff Geronimo, whom I did not meet since the Columbus meeting 1989, was now interested in orthogonal polynomials in two variables, a subject I had touched upon years back, so it gave fruitful exchange of information.

I had opportunity to discuss my ongoing project with Ismail on Kibble-Slepian kind of formulas-we came further ahead.

Added December 3, 2004:

I visited Jeff Geronomo and gave a talk at Georgia Tech in November 2004 and visited afterwards Mourad Ismail at University of Central Florida to continue collaboration.

——- I wish great success for BIRS-all the best

134 Stephen Wilson, professor of Applied Mathematics, University Of Strathclyde, UK

I attended the BIRS workshop on Nonlinear Dynamics of Thin Films and Fluid Interfaces in Nov/Dec 2003.

I thought that the format and location of the meeting were excellent and that the entire experience of spending a lengthly period of time in close contact with a large number of world experts in their area (in this case thin-film flow) in a relaxed and informal setting extremely academically stimulating.

In particular, the wide range of experts from several scientific disciplines who attended the workshop have significantly widened my own view of the subject. I returned scientifically (and physically!) reinvigorated from the meeting.

I can give the BIRS project my unqualified support and fervently hope that it continues to thrive!

135 Hubert Flenner, Ruhr-Universitaet Bochum, Germany

It is a pleasure for me to write about my experience in Banff. I found in Banff a wonderful scientific atmosphere, where I met during the workshop on "Commutative Algebra" (Sept. 2004) the very top experts of my field of interest. Of particular importance for me was that also people coming from representation theory of algebras were present, and a lot of very fruitful discussions came out of this. For me this was without doubt the most important conference I attended in that year.

The Banff math. institute, although only a couple of years old, is now already considered to be one of the very top institutes of its kind in the world, together with Oberwolfach in Germany and Luminy in France. I am very impressed that during such a short period it could be so professionally organized and received such an excellent reputation among all colleagues.

Last not least I want to mention the excellent staff and the wonderful surrounding, which is very impressive as are the scientific standards.

136 Anton Knigavko, McMaster University

I would like to thank BIRS for a nice experience and express my support to this excellent facility.

137 Leiba Rodman, College of William & Mary

I participated in the Workshop on Theory and Numerics of Matrix Eigenvalue Problems, at the Banff International Research Station that took place in November 2003. During the workshop, I had many useful discussions with the participants. In particular, I discussed plans for two research expository papers and an advanced level book. The expository papers are now submitted for publication. The book is now in the final stages of preparation.

138 Mike Kirby, University of Utah

I participated in the Mathematics and Visualization Workshop held during May. As a young researcher, I was very excited to be invited to participate in such a workshop. One question which always arises when attending such events is whether the time spent in such a small group setting (not a "high interaction" event like a national conference) is worth it. My answer with respect to my BIRS experience – it was worth it! During my time at the workshop, I was able to discuss many research opportunities in a depth that I would not be able to do at a conference. From discussions in May with fellow BIRS participants, I have submitted one research funding proposal, have another in progress, and have started research collaboration with someone whom I met at the workshop. My time was certainly well spent. I hope that BIRS is able to continue to provide an environment in which scientific interactions can take place.

139 John Wakeley, Thomas D. Cabot Associate Professor, Dept. of Organismic and Evolutionary Biology, Harvard University

I was a participant in the workshop on Stochastic Processes in Evolutionary and Disease Genetics organized by Ellen Baake and Warren Ewens. The meeting was a truly excellent one for me. It gave me the chance to have some extended discussions with people whom I had only met briefly before, in particular Martin Moehle, Anton Wakolbinger, Mattias Birkner, Rick Durrett and Ted Cox. This was very important for my research, which has only recently become rather mathematical. I am working on two new projects as a result of these interactions. In addition, I have been invited to a similar meeting at Oberwolfach (on Mathematical Population Genetics) in 2005 where the discussions begun at BIRS can continue. I also have plans to visit Rick Durrett next week at Cornell to talk about overlapping areas of research. Obviously this meeting was a huge success as far as I am concerned, and I would hope BIRS could hold similar meetings in the future. The unique nature (literally) of BIRS allow some great informal, but highly intellectual, interaction (e.g. on various hikes).

140 Jacob Rasmussen, Princeton University

I attended your workshop on "Floer homology for three-manifolds" last November. My experience there was absolutely spectacular. I can honestly say that it was the most stimulating and productive conference I've ever attended. The research environment - especially the common area and mealtimes - was very well set up to stimulate discussion and the exchange of ideas. I met a lot of new people, and got to spend more time with people I already knew than I otherwise would. The conference was also very productive. Probably everyone who attended will tell you about Eliashberg's theorem that weakly fillable contact manifolds are fillable. This is an enormous result, leading to Kronheimer and Mrowka's proof of property P (among other things.) On a smaller, more personal level, discussions at BIRS led to some of the work in my preprint on "Khovanov homology and the slice genus." Needless to say, I would leap at the opportunity to attend another conference at BIRS.

141 Emanuel Milman, PhD student, Weizmann Institute, Israel

My name is Emanuel Milman, and I am a Mathematics PhD student at the Weizmann Institute in Israel. I attended the July 2004 workshop on convexity in high dimensions at BIRS. I wish to express my gratitude to the organizers and to financial institutions that support BIRS for making the workshop possible and for inviting me there. The hospitality and the conditions for performing scientific research were excellent, and I hope that other students and researchers from all over the world will have an opportunity to benefit from these optimal conditions in the future as well. I have met many people in my field of research, and both personal and professional relationships have been formed (Prof. Alex Koldobsky is one that I mention in particular). My week in BIRS was very productive and inspiring, and I know that I am not the only one.

142 Siu O'Young, Associate Professor, Memorial University of Newfoundland

We attended a PIMS workshop last May, and were able to make connections with the aerospace research organization in Alberta for the advance of our research into Autonomous Aerial Vehicles.

143 Brigitte Servatius, Worcester Polytechnic Institute

I was a participant in the workshop on Modeling Protein Flexibility and Motions. I am a mathematician and it was a completely new experience for me to work with biologists. The result was rewarding. The discussions started in the presentation rooms were continued during meals and on beautiful mountain hikes even on the way to the airport. The work started at the workshop on molecular allostery will soon show some results. The two mathematical questions I posed before the workshop started,

were answered during the workshop (partly worked out on a hike) and will soon be submitted as: *The 2-Dimensional Rigidity of Certain Families of Graphs* the authors being Bill Jackson, School of Mathematical Sciences, Queen Mary, University of London, Mile End Road, London E1 4NS, England. Brigitte Servatius and Herman Servatius

144 Nick Patterson, Broad Institute, Massachusetts Institute of Technology

I attended a workshop on Mathematical Genetics at BIRS in Summer 2004. The facilities and organization were superb. I think as a result I was able to generate a number of promising new ideas, and with the help of a colleague at BIRS completely solve a problem that had been "on my plate" for at least a year.

The contrast with another conference I had attended that summer (in England) was especially striking; the difference was night and day and all in favor of Canada!

145 Hugh Couchman, Hugh Couchman, Professor, Physics & Astronomy Scientific Director, SHARCNET, Department of Physics & Astronomy, McMaster University

I have attended one workshop at BIRS November 2003. I thought that the setting was excellent, with all appropriate facilities provided. It was particularly valuable to have easy online access in the rooms including laptop hookup. The venue provided for excellent scientific interaction.

146 Pavel Pudlak, Academy of Sciences of the Czech Republic

The workshop that I attended this summer was very important for my research. I learned about new very important results about the subject I was working on (constructive Ramsey theory) when they were still very fresh. The format of the BIRS workshops is ideal for communicating results that are not ready for "big" conferences or for journals. The beautiful nature in Banff is not distracting, but rather stimulating. Often discussing mathematics during a walk is better than at a blackboard. Several participants stayed in Banff after conference as I did, thus I had more opportunities to exchange ideas with them.

147 Sara Biagini, University of Perugia and Scuola Normale

I have participated in June to the Workshop 'Semimartingale theory and practice in Finance'. My impression is that the organization was perfect, both scientifically and practically speaking. Since the invited people were a (relevant) part of the outstanding specialists, it was very stimulating for my research. And this also because we were really living together and there was so much time to discuss (during breaks, meals, after dinner). A paper of mine, joint with Prof M. Frittelli, has greatly benefited from the suggestions derived from that occasion. The facilities of the Center are also remarkable. I particularly appreciated the possibility of working in the room (there was a large desk and a computer, with web connection).

148 Peter Ashwin, University of Exeter

I participated in the workshop

Symmetry and Bifurcation in Biology

at BIRS 31/5/03 to 5/6/03 and would like to state that this was one of the most productive meetings I have ever attended. The scientific programme, atmosphere, facilities and setting were second to none, and I managed to set up many new contacts as well as building on previous collaborations with participants. Partly as a result of this I have steered my research into a new and I believe promising direction. I will certainly return to BIRS at the next opportunity I have!

149 Lloyd Kilford, California Institute of Technology

My joint paper with Kevin Buzzard, "The 2-adic eigencurve at the boundary of weight space", was

mainly written at the BIRS workshop "p-adic variation of motives" in December 2003. This provided some free time for Buzzard to write down many things which had not been written down prior to the workshop.

I also found it useful to meet other people working in similar fields to mine (particularly Payman Kassei, Graham Herrick and Fernando Gouvea).

150 Peyman Gohari, Concordia University

In May 2004 I attended a 2-day Workshop hosted by The Banff International Research Station (BIRS) entitled "Decentralized Discrete Event Systems: Structure, Communication and Control". More than 25 researchers who were working on similar problems gathered together to discuss their latest findings.

In terms of benefits and relevance to my research the BIRS workshop stands above any other conference or workshop that I ever attended in my entire academic life. For the first time, I attended–with great interest–every talk. The workshop also provided an ideal opportunity to forge new professional relationships and strengthen the existing ones. Shortly after the workshop, I, together with two colleagues, Dr. Peter Caines from McGill University and Dr. Sophie Pinchinat from IRISA, Universit de Rennes, whom I met for the first time at BIRS, applied for funding for a joint research project. Shortly after that I nominated (and she was subsequently appointed) another colleague Dr. Laurie Ricker whom again I met at BIRS for the first time to be appointed as an adjunct professor at Concordia University so that we can conduct, and apply for funding, for joint research projects and co-supervise graduate students in future.

All of this thanks to a two day workshop hosted by BIRS last summer.

151 Knut Aase, The Norgegian School of Economics and Business Administration, Bergen Norway

I attended a workshop at BIRS during the summer of 2003. This is a superb location for scientific thinking, where one gets a lot of inspiration from the magnificent nature in Banff. I was able to write a paper: "Jump Dynamics: The Equity Premium and the Risk-Free Rate Puzzles", based on this seminar, which I am rather pleased with. Hopefully it will be published in a good journal.

152 Weiqiang Wang, University of Virginia

BIRS at Banff is an ideal meeting place for mathematicians. I have been to many top math institutes all over the worlds, and BIRS is among the most impressive and enjoyable ones. I have attended two totally different workshops at BIRS in the last two years, one geometric and one algebraic. Also, I am eager to go back to attend another one in Spring 2005.

Some significant features of BIRS workshops I am most impressed of:

1.The participants are a good mixture of ACTIVE mathematicians (faculty and postdocs) from North America, Europe and Asia, etc.

2. they are focused on the interactions of different fields and/or subfields.

3. doing and talking mathematics in such a beautiful environment at Banff is most enjoyable.

As a specific example, in the "Workshop on Interaction of Finite Dimensional Algebras with other areas of Mathematics", September 25-30, 2004, I met a group of active mathematicians in Finite-dimensional Algebras for the first time, and was exposed further to the connections between Lie theory and finite-dimensional algebra. One project I am working on now is very much in this direction.

153 Andrea L. Bertozzi, Professor of Mathematics, University of California Los Angeles

Regarding a new contact, I have hired and am now collaborating with a postdoc, Dejan Slepcev, whose work I got to know from our thin films workshop last year. He was at the time a postdoc in Toronto working with Mary Pugh and she introduced me to his work as part of that workshop. I am very happy to have this connection.

I participated in the imaging workshop this year and found it to be an excellent program. I had many interesting scientific discussions during this time period and got a lot out of the meeting.

BIRS is a valuable resource.

154 Jonathan Crook, Director, Credit Research Centre, University of Edinburgh

I attended a Workshop lasting about 5 days in September 2003 on credit scoring. It was an extremely beneficial event for me. Although the number of attendees was around 30 I met several researchers in my area whose work I was not previously familiar with. I have kept up with some of these since then. It also enabled me to make contact again with researchers in the area who I had not seen for some time and who are based in several different countries. The meeting was extremely productive in terms of enhancing my own research and there was considerable synergy created in the discussion that took place. One outcome is that I am now coauthoring a paper on reject inference which was conceived at the meeting. Indeed whilst at the meeting we penned a number of potential collaborative research projects.

It would be extremely beneficial to have a similar event in the future.

155 Abby Thompson, Department of Mathematics, University of California-Davis

I was a co-organizer of the workshop "Topology in and around dimension three" in September 1003. It was a fantastic experience (and one that I and my co-organizers are anxious to try to repeat– we're applying to run another workshop in 2006). All the practical arrangements were taken care of for us, with remarkable efficiency. That left us in the position of organizers with very little to do except to participate fully workshop itself. Living and working with the forty participants for the week provided the basis for much collaboration and was the start of many new ideas. I got at least one paper from it myself, and know of several others that had their start during that week. In addition I have a graduate student and a postdoc at UC Davis who attended the workshop, and they were inspired by the lectures and especially by the chance to work closely with the more established researchers at the conference. BIRS is a perfect set-up and setting for promoting excellent research. Best of luck with your renewal.

156 Rachel Pries, Department of Mathematics, Colorado State University

At my institution there are not many people I can talk with mathematically and the teaching duties take a lot of time when you are a young faculty member. Spending a week in Banff doing only research with many people close to my area was extremely valuable. It helped me finish my paper "Deformations of curves with a wildly ramified group action". I also heard a classical music concert there which was beautiful.

157 Simon Levin, Princeton University

I have attended one Banff meeting so far, and am involved in organizing a second. The first was an outstanding experience, even better than the several excellent experiences I have had at Oberwolfach. The meeting was first-rate, the facilities awesome, and the staff helpful and outstanding.

158 John Dennis, Rice University

I recently attended the PNWNAS meeting at BIRS. This is an annual series that serves to keep regional computational mathematicians in contact. The meetings are uniformly high caliber. A very nice thing is that new young faculty members are generally invited to speak. This year I met Michael Friedman, a new Stanford grad who has just joined the faculty at UBC.

I have been to many meetings at Oberwolfach, and indeed I have co-organized meetings there. It would be an overstatement to say BIRS is directly comparable to that wonderful facility, but, BIRS is certainly the closest thing we have in the new world. Keep it up, and keep improving. BIRS is terrific now, and I am sure that it will be even better.

I have an ongoing collaboration with Professor Charles Audet of Montreal and Boeing and Exxon Mobil. It had occurred to me that BIRS would be a terrific place for our next workshop. Maybe you will hear from me again!

159 Martin Barlow, University of British Columbia

I have now attended two meetings at BIRS (SPDE in autumn 2003, Stochastic Analysis in April 2004). Both we excellent meetings in scientific terms.

The foreign participants were very impressed with BIRS and Banff. I recall one participant at the Stochastic Analysis meeting telling me that he came just because Zambotti (who was at the first meeting) had told him how good it was.

160 Omayra Ortega, Department of Applied Mathematics, University of Iowa

I had the pleasure of attending a summer school on infectious disease modeling titled "MITACS-MSRI-PIMS Special Program on Infectious Diseases" at the Banff International Research Center in Banff, Alberta. I believe the dates were 6/19 through 7/2. I was also invited to the conference afterwards, but I needed to come back to Iowa City and take a PDE comprehensive exam.

I learned many new techniques that I have already and will continue to apply to my dissertation research on modeling vaccination strategies for rotavirus. I was able to consult with Fred Brauer, James Watmough, Pauline van den Driesshe, Mark Lewis, and Linda Allen. These are some of the most prominent people in my field as well as authors of papers that I frequently reference. Being able to talk with them about my current research and collaborate with them on mini-projects during the summer school was a great resource to me and an experience that I will remember for the rest of my career.

I am grateful that this research center was established and appreciate the center's commitment to uniting disparate researchers in the mathematical sciences. I hope that I will be able to return to the Banff International Research Center to collaborate with other great minds in the future.

161 Daniel Ruberman, Brandeis University

I took part in the workshop "Topology in and around dimension three" in Banff between 09/13 and 09/18, 2003. I sent the following message to the organizers after the meeting, in response to their request for comments. Feel free to use it in your renewal application.

As one of several people who were there with interests "around" dimension 3, rather than in hardcore 3-manifold theory proper, I found it to be a valuable conference on several levels. On the whole, the lectures were interesting, and there was a good variety of topics. Perhaps the most important opportunity for me was to talk at some length with some of the younger people in the field, whom I generally do not know well. I also found that some of my conversations with more established people were very useful; for example some discussions with John Etnyre may be helpful in advancing a project of mine relating contact geometry and homology cobordism. (As his interests are in contact geometry rather than in 3-manifold topology per se, this might also be viewed as a positive outcome of the broader mix of people at the conference). Finally, I got a chance to meet and talk with David Krebes (who came up daily from Calgary) about some things related to his thesis (about 4 years ago). In the course of a few breaks and conversations over meals, we seemed to have solved a problem in knot theory that was raised in one of his papers. This was not a 'breakthrough', but should result in a nice paper.

It really was an enjoyable week; thanks for the invitation and for running things so smoothly.

162 Michael Balogh, Department of Physics, University of Waterloo

I participated in the Nov 2003 BIRS conference "Galaxy formation: a Herculean Challenge". The participants were among the very best international experts in the astrophysics of galaxy formation, and I had the opportunity to interact with many people whom I had not met at previous conferences. In particular, presentations by James Wadsley, Matthias Steinmetz and Rob Thacker introduced me to new research results that I had not seen before, and that have strongly influenced the subsequent direction of my own research. I am currently beginning projects with Thacker and Wadsley that were largely motivated by results at this meeting.

The meeting also provided me the opportunity to meet with collaborators with whom I had begun work earlier, in an environment that was very conducive to making progress on our research. Progress on the following papers was made during this meeting (coauthors Babul and McCarthy were at the meeting):

Balogh, M., Babul, A, Voit, G., McCarthy, I., Jones, L., Lewis, G. & Ebeling, H., " An analytic investigation of the origin of scatter in observed X-ray properties of galaxy groups and clusters.", in preparation.

McCarthy, I., Balogh, M., Babul, A., Poole, G., Horner, D. & Holder, G. 2004, "Models of the ICM with heating and cooling: explaining the global and structural X-ray properties of clusters", 2004, Astrophysical Journal, 613, 811

The workshop at BIRS was an excellent experience and one of the best scientific meetings I have attended, in my 10 years as an astronomer.

163 Sandeep Kulkarni, Michigan State University

Unfortunately, due to unexpected circumstances, I was unable to attend this workshop. However, based on the my discussion about the workshop with others who attended, it was very beneficial. When a similar workshop is arranged in future, I will certainly be interested in attending it.

164 Jon Alperin, Department of Mathematics, University of Chicago

It is very good news that PIMS hopes to not only continue its Banff program but to expand it as well. I spent a week there for one meeting and it was a very productive and interesting meeting, the institute was exceptionally well run and, of course, it was near idyllic being in Banff.

These programs are now an important international fixture and may they continue and grow.

165 Penny Haxell, University of Waterloo

I organised a FRG at BIRS in May 2003, on Regularity of Hypergraphs. This was a very successful meeting. As requested by BIRS, I sent a report on the activities of the meeting, please feel free to quote from that report anything that would be useful as a testimonial for your renewal proposal. I would add the extra information that two problems that we worked on as group projects in our FRG have turned into papers: one is

The Ramsey number for hypergraph cycles I, P. Haxell, T. Luczak, Y. Peng, V. Rodl, A. Rucinski, M. Simonovits, J. Skokan, recently accepted subject to minor revision to the Journal of Combinatorial Theory, Series A, and

The Ramsey number for hypergraph cycles II, P. Haxell, T. Luczak, Y. Peng, V. Rodl, A. Rucinski, M. Simonovits, J. Skokan, in preparation.

The BIRS facility is first-class and I am sure it will continue to make a great contribution to mathematics.

166 Peter Hoyer, Department of Computer Science, University of Calgary

BIRS is the most attractive location worldwide for a research workshop and has been very successful in attracting the best researchers from around the globe. Other excellent research stations are The Fields Institute in Toronto, MSRI in California, Aspen in Colorado, and Dagstuhl in Germany, but BIRS is still my favorite location. The settings are ideal for discussions, interactions, reflections, and explorations. BIRS is a gem that puts western Canada on the international research map.

167 Florin Diacu, Department of Mathematics, University of Victoria

I fully agree with Don's assessment of BIRS. Our Celestial Mechanics conference was a tremendous success. But for me BIRS means more. The two other events I attended (those organized by Chandler Davis and Marjorie Senechal) have helped me with my book on chronology. The input and the discussions that took place after my presentation were extremely helpful.

BIRS is indeed an exceptionally good initiative, which should be maintained at any price.

168 Fred Brauer, Department of Mathematics, University of British Columbia

I was one of the organizers of a summer school and workshop on modelling of infectious diseases at BIRS

in June - July, 2004. We all felt that this was a great success because we were able to assemble a group of people with diverse backgrounds and different levels of experience and put them in sufficiently close contact to achieve real exchanges of knowledge and perspectives. The facilities at BIRS were ideal for this purpose; students spending a lot of time in close contact, both scientific and social, and working together on group projects gained a great deal. The organizers believe that the school was a good start toward the establishment of a cadre of developing scientists interested in using mathematics sensibly in epidemiological problems.

The workshop which followed the school was an opportunity for some of these developing scientists to interact with a group of more experienced workers, as well as for these more experienced workers to exchange ideas about epidemiological modelling. The interdisciplinary contacts will certainly lead to future interdisciplinary cooperation and research.

169 Gemai Chen, Department of Mathematics and Statistics, University of Calgary

I was extremely impressed by the efficiency BIRS was organizing meetings and the excellent arrangements made to make the participants feel at home. As a result, I want to organize meetings to be held at BIRS and I have submitted a proposal.

170 Saurya Das, Assistant Professor, University of Lethbridge

This letter is in support of renewal of BIRS, Banff. I had attended a two day meeting in August 2003 co-organised by the Institute of Theoretical Physics, University of Alberta and held at BIRS. The meeting had been quite useful to me. I presented an invited talk and discussed with several colleagues during the meeting. I hope there are more such meetings on fields of my interest (Quantum Gravity/Mathematical Physics) in the near future which I can attend. Please do not hesitate to contact me if you need any other information.

171 Lawrence Peterson, Department of Mathematics, University of North Dakota

I attended the workshop on "Conformal Geometry" held at the Banff International Research Station in Banff, Alberta, July 31-August 5, 2004. I feel that my attendance at the workshop was worthwhile. During the workshop I met with William Ugalde, and we discussed a new project. Since then the two of us have worked on the project, and we have submitted a related grant proposal to the US National Science Foundation. During the meeting I also briefly discussed an existing research project with Rod Gover. The conference provided an opportunity for me to establish and maintain contacts with other researchers in my field. I am grateful to the Banff International Research Station and to the organizers who invited me.

172 Shigeki Akiyama, Department of Mathematics, Niigata University

I spent 1 week there to meet mathematicians very close to me in subject to discuss with. From then, several new project had begun and it still continues with Y.Wang, V.Sirvent and B.Solomyak. The place, food and faciltis were excellent and I am sure these circumstances helped us much to begin new things in brand new direction. Thank you again!

173 Elizabeth Thompson, Department of Statistics, University of Washington

I very much enjoyed the workshop Stochastic processes in evolutionary and disease genetics 04w5015, August 7 to August 12, 2004

It was the most interesting meeting I have been to in quite a while, and brought together a lot of people I don't normally see at a single meeting. It was very useful in bringing together ideas from several areas of research in which I am involved. It was also most useful for my student who attended as a student observer. It would have been nice if there could have been a few more than the 2 student observers.

174 Michael Neubert, Associate Scientist, Biology Department, Woods Hole Oceanographic Institution

I write having just returned from the BIRS workshop on the mathematics of ecological invasions, organized by Mark Lewis, Pauline van den Driessche and Mark Kot.

The meeting was fabulous. Just the right balance of lectures and unscheduled time to meet some of the most important people in the field. I have come away with at least two new collaborations, a completed manuscript, and many new ideas.

I look forward to future meetings at BIRS—perhaps some that I will try to organize myself.

175 Kirsten Fagnan, University of Washington

I participated in the Pacific Northwest Numerical Analysis Seminar workshop during September of this year. As a second year graduate student I found it to be an invaluable opportunity to learn more about research in numerical analysis and meet people in close proximity to the university of Washington with similar interests. I also met several graduate students from other universities and have remained in contact with them.

The presentations at the conference were well done and many were relevant to the project I am working on for my thesis. The workshop was well-organized and provided a good environment for discussion.

176 Danny Dyer, Department of Mathematics, University of Regina

In the past year, I have had the privilege to participate in a workshop at the Banff International Research Station. The workshop was wonderful, not the least because of the wonderful setting and the diversions provided by the town of Banff. Indeed the excellent food at BIRS made "dining-in" at the residence a pleasure!

More importantly, the workshop I attended allowed me to meet with fellow mathematicians interested in graph searching. From discussions with Richard Nowakowski and Gena Hahn (the latter a person I met for the first time at the workshop) I was able to develop new directions to take my just complete PhD work.

In short, I enjoyed myself immensely at BIRS, found it professionally a very profitable meeting, and hope to get a chance to return there for future workshops.

177 Katherine F. Stevenson, Department of Mathematics, California State University

I attended a BIRS meeting in September of 2003. It was organized by David Harbater on Galois Theory. It was quite useful to me as it was the first significant conference that I had attended after the birth of my two children (17 months apart). The format of having an intimate and focused conference with not too many talks, was perfect for me. It allowed me to get caught up with what everyone else was working on, and I had time to follow up on what interested me during the breaks and meals. The conference or workshop also had a direct effect on my research. By attending the conference, I was able to restart a collaboration with David Harbater. This resulted in our completing a 30 page paper this fall that has been submitted for publication in a volume in honor of Michael Artin's 60'th birthday. The title is "Local Galios Theory in dimension 2."

Okay, that is the positive... now, for your own info, this is the negative: You are NOT well equipped for coping with families. You are presumably modeling your selves on Oberwolfach. I think that this is a great idea, and a much needed one. However, you should look into how they cope with families. If you want women to attend your conferences, then making it family friendly, or at least family tolerant, would go a long way. Here are my specific complaints: 1) I was told that because I was traveling with my family, that there was no logistical way for *any* of my room and board to be funded. Moreover, the cost of the rooms was very high. 2) The accommodations for families are far away, and the rooms large enough to house two parents and two small children were like dorm rooms that had been taken over by frat boys. I actually had to demand to be moved from the first room because it was simply unsanitary: bugs, dirt, mold, etc... 3) Before arriving I had planned to have my family join in the conference meals. I did not expect the conference to pay for that, but I assumed that the cost

would be modest. Eating with the other conferees is an important part of a conference format like this, so I thought that it would be worth the expense. However, this turned out to be shockingly expensive... something like $ 15 per person (children included) for a coffee and croissant for breakfast. These are resort prices! As a result, for each I had to choose each meal whether I would attend to my family or my conference.

To be frank, if I ever come back to BIRS, I will just look into renting an apartment or motel room in town. Most motels have a kitchenette that is more functional than those provided at BIRS. It would cost nothing to put in a microwave. And while they're at it how about some tables and chairs?

Compare this to my experience in Oberwolfach. They have apartments with simple, CLEAN kitchens, a bedroom and a living room. These were built for the "research in pairs" program, but the organizers have adapted them for families. We had a sunny apartment, with nice Ikea like furniture, including a clean, safe wooden crib. We were charged a reasonable rate for the room. Moreover, we ate our meals with everyone else and we were charged a modest cost for this. High chairs were readily available. The staff were courteous and very helpful with all my requests. In short, we felt included and welcome in the conference. It was quite the opposite at BIRS.

I hope that you will take my concerns seriously. You have an opportunity to have a great program, but if you want people with families to be able to join in you need to make it possible for them to bring along their families. You may think that one should just leave the family behind, but this is not always feasible or desirable.

178 Robert Craigen, Department of Mathematics, University of Manitoba

I was at a 3-day PIMS workshop on Combinatorial Matrix Theory at BIRS this Spring. I found the environment there, and the service of the staff, to be exceptional, and the atmosphere more relaxed and productive than most conferences because so many of the logistics were well in hand, leaving participants to concentrate on their academic exchanges. The facility is well-designed for a workshop of this size, and I plan to propose some similar events in the near future; the facility and program is unique in Canada and has created a level of academic exchange that is hard to duplicate in other types of facilities.

179 Artyom Shneyerov, Assistant Professor of Economics, University of British Columbia

Participating in the BIRS workshop last spring was very useful for me. I got a lot of feedback on the paper I presented, and also met with researchers that otherwise would be difficult to meet in person and informally chat with. I am currently working on a manuscript "Dynamic Matching with Two-sided Incomplete Information and Participation Costs: Convergence and Existence" that uses some of the ideas from the workshop. The quality of presentations was very high and I would certainly be interested in participating again.

180 Ingrid M. Parker, Department of Biology, University of California-Santa Cruz

I just returned from a workshop at BIRS, and I wanted to express my deep-felt gratitude for having the opportunity to participate in the workshop. I met several people I have always wanted to meet, and had an incredibly stimulating and intellectually satisfying trip. The international scope was particularly unique, in my experience. The setting and format of the meeting were perfectly suited to inspiring new ideas and new collaborations. In fact, I came away with ideas for two new papers.

Thank you so much for hosting this event, and others like it.

181 David McKinnon, Department of Mathematics, University of Waterloo

Indeed I did participate in a BIRS workshop this past year – in fact, it was just last month. I can honestly say that it was the best conference I have ever attended.

There are many reasons for this. First of all, the surroundings were very pleasant, but then, most conferences are held in pleasant surroundings, so this was not remarkable. Nevertheless, hiking up a mountain and along a river are exhilarating ways to spend an afternoon.

Most importantly, however, the BIRS workshop allowed me to have a great number of lengthy and productive conversations with colleagues from as far away as Australia. After the workshop, I had at least four times as many exciting ideas to pursue as I did beforehand. In just five days, I started active research collaborations on three different projects, each with a colleague with whom I had never worked before. These range from finding integral points on a certain K3 surface to an investigation of Vojta's Conjecture on the blowup of a Jacobian surface.

The most promising project, in fact, is one which brings together the work of Jordan Ellenberg and Akshay Venkatesh with mine, on uniform estimates for the distribution of rational points on rational curves. We're quite hopeful that the general approach of Ellenberg and Venkatesh will be compatible with the more precise results I obtain for lines.

Of course, the beginning of a research project is a very uncertain time, and many of these projects may not come to fruition. But the mere fact that so many productive conversations were packed into so short a time is a powerful testament to the effectiveness of the BIRS workshop as a vehicle for communication between mathematical researchers. Moreover, I was not alone in my sentiments: the two colleagues of mine who shared my shuttle back to Calgary agreed that the workshop was the best they had ever attended, and at least one other of my colleagues was inspired to send forth a proposal of her own for a BIRS workshop in the future. BIRS is a fantastic asset to the mathematical community, and I wholeheartedly endorse it.

182 Hongwei Zhang, Ohio State University

It has been a great experience for me to attend the 2004 BIRS International Workshop on Self-stabilizing Distributed Systems. I am PhD student, and I got the chance to talk to many other experts in the field, and exchange our thinking.

183 Klaus Hulek, Department of Mathematics, University of Hannover

I participated in 2 workshops in Banff and found both of them most stimulating and useful. The first of these workshops was "Commutative Algebra and Geometry" (03w5005). After the end of the workshop I spent some more days at BIRS working on a research in team programme with M. Green, D.Eisenbud and S. Popescu. This gave us the chanced to make substantial progress on a project which we had been working on for more than 2 years. This collaboration finally resulted in the following two papers:

math.AG/0404517 Small schemes and varieties of minimal degree. David Eisenbud, Mark Green, Klaus Hulek, Sorin Popescu.

math.AG/0404516 Restricting linear syzygies: algebra and geometry. David Eisenbud, Mark Green, Klaus Hulek, Sorin Popescu.

The meeting in Banff was crucial for us for completing these two papers.

The second meeting I attended was "Calabi-Yau varieties and mirror symmetry" (03w5061). I found this meeting also very stimulating and had very fruitful discussions not only with mathematicians but also with some of the physicists who attended this workshop. I am still working on a joint paper with H. Verrill which originated from discussions started at this meeting.

184 Michiel van den Berg, Department of Mathematics, University of Bristol

I had the pleasure to participate in the Workshop "Stochastic Analysis" over the Easter 2004. I was hugely impressed with both the facilities of BIRS , the attentiveness of the staff and the quality of the participants/programme.

To have a centre with say an "Oberwolfach like programme" at your side of the globe is extremely useful since it is more likely to attract participants who would not necessarily make it all the way to Germany.

I very much benefited from discussions in particular from those with Professors Barlow, Burdzy and Z.Q. Chen concerning a variety of problems (e.g. the hot spots conjecture and problems related to reflecting Brownian motion). I was able to continue my

work on a manuscript "Heat flow, Brownian motion and Newtonian capacity: a refinement of theorems of F. Spitzer and S.C. Port" without interruption. This was also the topic of my lecture at the Workshop.

Of course the surroundings of Banff are breathtaking in all respects, and I hope to have the privilege to visit BIRS in the future.

185 Andrew Knyazev, Department of Mathematics, University of Colorado at Denver

I have participated in the Theory and Numerics of Matrix Eigenvalue Problems, BIRS workshop, November 22-27, 2003. It has been a wonderful and stimulating experience that is incomparable to any other workshops I have participated in, except for those organized by the Mathematisches Forschungsinstitut Oberwolfach (MFO), Germany. Both BIRS and MFO allow workshop participants to meet in a closed environment that stimulates communications at the personal level and an easy opportunity for exchange of ideas, which is especially important in mathematics. Still, Banff has several advantages compared to Oberwolfach: it is much easier to travel to Banff for those of us in the North America; it promotes cooperation with Canadian mathematicians, which I think is very important; and last, but not least, Banff itself is a great village beautiful located in the mountains.

The workshop that I attended has been very well organized, with world best experts in the area of eigenvalue problems participating. It has been extremely useful for me personally. The open workshop format and unlimited possibilities for discussions have allowed me to make sure that my ideas concerning the Locally Optimal Block Preconditioned Conjugate Gradient (LOBPCG) method that I develop have been well understood by all workshop participants.

It has been also a great pleasure to have an opportunity to meet and get to know personally a number of Canadian mathematicians. Stimulating discussions with Carrington (Montreal) have attracted my attention to large eigenvalue problems in quantum dynamics, and I have started doing research in this new area, which has resulted, e.g., in the implementation of the LOBPCG in a public software code Abinit for quantum dynamics.

A new cooperative project with Lehoucq (Sandia, Albuquerque) on the stopping criteria for preconditioned eigenvalue solvers, such as LOBPCG, has also been originated during the workshop. The joint paper is in progress.

To conclude, I highly support BIRS as a unique place where mathematical research and discussions can be conducted under the best conditions, and I hope that that BIRS request to expand the operations to 48 weeks per year instead of 40 is approved. BIRS is granted.

186 Jerry Ostriker, Institute of Astronomy, University of Cambridge

The experience was great! Most useful workshop that I have been to in years.

187 Victor Kac, Department of Mathematics, Massachusetts Institute of Technology

I support the renewal of the BIRS with my great enthusiasm. In 2003 I organised a 3 weeks working in teams program and it was very successful. Though we didn't achieve our main (probably too ambitious) goals, the 3 weeks spent there has lead to a new direction of my research. I find the organisation and the atmosphere of BIRS (which includes a lot of music) very stimulating. A few months ago Roberto Longo and myself have applied to another program at BIRS, so we are very interested in the renewal of the BIRS.

188 Masoud Khalkhali, Associate professor of mathematics, University of Western Ontario

I am very pleased that I am given the opportunity to share my experience as a participant in BIRS activities in 2003. I felt I was was very lucky to see our proposal for a "BIRS workshop on noncommutative geometry"(organized by Alain Connes, Joachim Cuntz, George Elliott, and myself) approved by BIRS. This meeting by all means was a big success and drew a lot of attention in North America, Europe and across the world. Quite a few of graduate students and young postdoctoral fellows from Canada, South America,

Europe and States were among the participants as well as the most senior and eminent figures in the field. On an operational level everybody was surprised and pleased to see how smoothly things moved and how caring and attentive the BIRS staff were. This despite the fact that we were there hardly after a few weeks of opening the BIRS. On the scientific level I am sure all participants will share their experiences. For me the meeting was specially rewarding because right at that moment I was involved on a collaborative project with Piotr Hajac from Warsaw, Yorck Sommerhaeuser from Munich, and my own graduate student Bahram Rangipour (now in Victoria) and during the meeting we managed to come up with some of our best ideas. Extensive, and very stimulating exchange of ideas during the meeting with Alain Connes played a very important role and convinced us that we are on the right track. Without this meeting it would have taken much longer to finish our paper.

During 2003 I also participated in another BIRS activity on "New approaches to Novikov and Baum-Connes conjectures". The format and style of this meeting was very different with a small group of participants focusing on a very well defined problem and discussing the latest developments.I certainly learned a lot of things that otherwise could have not learned that easily. I also fostered long term friendships and exchange with several of the participants that I am sure will have a big impact on my career.

All in all, both as an organizer and a participant, I think the creation of the BIRS was a great idea that will have a huge impact on research in Mathematics both in north America and worldwide. From a Canadian perspective, it is also very pleasing to see BIRS as one of the top destinations for mathematicians worldwide. I enthusiastically support the continuation and extension of the activities of BIRS in the future.

189 Anna Vainchtein, Assistant Professor, Department of Mathematics, University of Pittsburgh

I have participated in the BIRS workshop "Defect and their dynamics" in August 2003. I enjoyed this workshop and the overall atmosphere at BIRS very much. I particularly liked the fact that there was plenty of opportunity to interact with other participants, discuss problems and make new contacts since we all lived in the same place, went hiking together and shared meals. At the workshop I attended, I met and had scientific discussions with several people whose work I have long admired but whom I haven't met in person before, including Peter Bates, Nick Alikakos and John Cahn. I think BIRS is a wonderful place for research meetings and discussions, and I am looking forward to participating in or even co-organizing another workshop.

190 Claus Bauer, Dolby Laboratories

I participated at the CAAN 2004 workshop in Banff in August 2004. This workshop was one of the most fruitful and pleasant encounters in the scientific community I remember. The place offered an optimal venue to discuss advanced topics with a small, focused group of experts without any distractions. I got introductions to new fields of advanced research and made valuable contacts. I wish that the Banff facility will continue to be an important center of scientific exchange.

191 Igor Nikolaev, Department of Mathematics, University of Calgary

I took part in 5 workshops at BIRS since it was open in 2002. The existence of BIRS is ABSOLUTELY important for me. Actually, I moved from Toronto to Calgary three years ago having in mind this new facility established in Banff.

For example, I issued preprints http://xxx.lanl.gov/abs/math.AG/ http://xxx.lanl.gov/abs/ma th.OA/0310400 under impression of very stimulating talks at the "Noncommutative geometry Workshop" at BIRS in April of 2003.

BIRS is unique place in the world of such quality and calibre. I thank God such place exists. Keep it going and growing!

192 Matt Kerr, L.E. Dickson Instructor, University of Chicago

I am happy to give a short testimonial to this effect:

I was a speaker at the Dec. 2003 BIRS Conference on "Calabi-Yau Varieties and Mirror Symmetry", organized by James Lewis and Noriko Yui. Although this is not my area, I expected (correctly) that my work on regulators could benefit from importing some of its computational techniques. Not only did I find the BIRS facilities excellent (e.g., computer terminals in the well-maintained rooms); I met with two collaborators and made four new contacts, with one of whom I am now engaged in a research project on Picard-Fuchs differential equations for regulator "periods". This is easily one of the most important conference centers in North America, comparable for instance to the CIRM-Luminy in Marseille.

193 Michael Peters, Department of Economics, University of British Columbia

Thank you for the invitation to last year's mathematical economics conference at BIRS. The sessions were interesting. The working conditions at the conference were excellent, both for collaboration and for putting in a little extra work after the sessions ended. The biggest benefit for me was the realization that mathematicians like Robert McCann and computer scientists like Kevin Leyton-Brown are working on problems that are so closely related to what we do in economics in mechanism design. We haven't yet had enough opportunity to discuss these issues in detail, but I will keep you informed about the research that results from this collaboration.

194 Matthew Szczesny, University of Pennsylvania

I participated in the workshop "Motivic integration, elliptic genera, and the chiral de Rham complex" in the Summer of 2003. The workshop was very successful and stimulating. I met a large number of mathematicians that I had not before (e.g. Francois Loeser, Julia Gordon, Anatoly Libgober, etc.) Discussion with Anatoly Libgober resulted in a paper on the elliptic genus and discrete torsion, which will appear shortly. A number of other directions emerged from those discussion that we are currently pursuing.

195 Baruch Solel,Department of Mathematics

I participated in the BIRS workshop organized by A. Donsig and M. Lamoureux on December 2003 (Coordinate methods in operator Algebras).

I want to take this opportunity to express my thanks to PIMS/BIRS for organizing and supporting this conference. It was a very stimulating conference. It brought together researchers in a focused area and provided excellent facilities for interactions between them. The whole setup there encourages professional discussions (whether it is in special rooms set up for that or around the dinner table) and is very helpful.

Sometimes one finds a certain conference helpful and stimulating but it is hard to pinpoint the difference it made for one's research. In this case, however, I can state at least two works that originated there. I met there Prof. D. Kribs and we started discussing a joint project. A month ago we finally submitted the resulting paper to a scientific journal (acknowledging our thanks to BIRS and the organizers of the conference). Another work is a work that was stimulated by new results presented at the conference by Prof. K. Davidson. This work is still in progress. So, at least for me, the workshop was very helpful and I hope you will continue supporting such conferences.

196 Gurjar Rajendra, TIFR

Our team consisting of four mathematicians, Professors M. Miyanishi and Professor K. Masuda from Japan, Professor P. Russell from McGill University, Canada, and myself from India spent 3 wonderful weeks at BIRS (July 23-August 14, 2004). Miyanishi, Russell and myself have known each other for more than twenty years. Miyanishi and I have been collaborating for over 18 years. All four of us meet in various conferences around the world. We work in exactly the same area of Algebraic Geometry and have been following each other's work quite closely. But this was the first time we got such a nice opportunity to spend three weeks for a joint project. The research project we undertook was dear to all of us. It turned out that all of us had significant questions to ask. Since we have somewhat different expertise, the different angles of looking at things were very useful for our work and it was a learning process for each of us. Even during our evening walks some mathematical points which had troubled us during our daily discussions occupied our thoughts. Happily, we could finish a very big chunk of what we set out to prove, type the manuscript and submit our report

before leaving. The other facilities like food. stay, recreation were very nice. There will not be a better setting for doing research in mathematics than BIRS. The staff of BIRS was extremely hospitable and efficient. In short, this Center as been playing a very important role for international collaborations in mathematical research. Although I spent most of time at BIRS doing mathematics and taking walks it is clear that BIRS is also an important center for other cultural activities like plays, operas, concerts, and so on. Many countries would like to emulate this example.

197 Eduardo Sontag, Professor of Mathematics, Rutgers, Steering Committee, BioMaPS Institute for Quantitative Biology, Rutgers

I attended a workshop in the summer of 2003, and organized another one in the summer of 2004, both times in mathematical biology. The BIRS provided a perfect environment, in every respect: scientific, personal, and setting, for interdisciplinary meetings. At the meeting that I organized, we had mathematicians, biologists, computer scientists, electrical engineers, and others from varied backgrounds. The fact that everyone is housed nearby, and meals are taken together, encouraged interaction like I have not seen elsewhere. The conference facilities are just perfect.

I am sure that you will get renewed - it would be crazy not to!

198 Thierry Coulhon, president de l'université de Cergy-Pontoise

Je continue en broken english car j'imagine que ma reponse a de fortes chances d'etre traitee par des anglophones.

The workshop on geometry and stochastic analysis in Banff was for me a great opportunity to meet people I should have met long ago (e.g. J-D Deuschel), to hear about interesting results (I remember the ones by Bruce Driver and his student Thai Melcher), to finish a project with Martin Barlow and Takashi Kumagai which was then submitted to CPAM, to discuss the organization of a workshop in Oberwolfach with Theo Sturm and Takashi Kumagai; finally a very interesting question by Theo Sturm and Laurent Saloff-Coste during my talk triggered a work I am now finishing with Pascal Auscher

I don't think you should mention in your report the last night we spent in the cow-boy bar downtown, attending to a show by the beautiful singer Lisa Hewitt, nor the fact that my laptop was broken by a shock with a pair of skis in the shuttle back to Calgary, but these are part of my memories of this week...

Bonne chance pour ce renouvellement bien merite

199 Romeel Dave, University of Arizona

I was invited to participate in the BIRS workshop "Galaxy Formation: A Herculean Challenge" in November, 2003. This meeting, I can say with certainty, was among the best meetings of the more than dozen I have attended in the past few years. There was excellent turnout among both observational and theoretical astronomers, no doubt in part due to the excellent location and facilities provided by BIRS. As a result, the meeting was focused, lively, and full of new results that helped shape some important directions for my future research. For myself, this meeting was among several that spurred me to investigate the growth of stellar mass in massive galaxies, where observations have resulted in some puzzling controversies.

I sincerely hope that BIRS is given full support for continuing to provide excellent facilities for interaction in a beautiful setting. I would certainly make every effort to attend another BIRS meeting should the opportunity present itself.

200 Van Vu, Department of Mathematics, University of California at San Diego

I have participated in two recent workshops at BIRS: Graph coloring (sept 2003) by Bruce Reed (Univ. McGill), Paul Seymour (Princeton) and Convex Geometric Analysis (July 2004) organzied by Nicole Tomczak-Jaegermann (University of Alberta,), Vitali Milman (Tel Aviv University) and Elisabeth Werner (Case Western Reserve University).

I have found both workshops extremely stimulating. I have heard several interesting lectures and learn many new results. Some of these results give me new ideas for my own research. For instance, my

recent work with Terence Tao on random Bernoulli matrices is partially motivated by talks presented at the second workshop. The atmosphere at the workshops was remarkable and the view from the dining hall could hardly be better.

I wish that BIRS would be able to continue and expand its workshop series for a long time. This is essential for the mathematics community in North America and worldwide.

201 Noriko Yui, Department of Mathematics, Queen's University

I am Noriko Yui, Professor of Mathematics at Queen's University in Kingston, Ontario. Last December (6–11, 2003), I took part in a wonderful 5 day workshop at BIRS on "Calabi-Yau Varieties and Mirror Symmetry". I was one of the organizers. The workshop brought together many researchers working on mirror symmetry from different perspectives. This included mathematical physicists, geometers of all kinds (algebraic, arithmetic, complex, differential and symplectic geometers) as well as number theorists. BIRS provided an ideal setting for interactions among participants.

My own field of expertise is in Arithmetic/Algebraic Geometry, and I have been working on mirror symmetry from number theoretic point of view. The workshop gave me a rare opportunity to learn physics around mirror symmetry directly from physicists. BIRS provided an ideal setting for informal discussions among participants, and heated discussions lasted till midnight or even continued to small hours.

The Proceedings of the workshop is planned to be published from the International Press/American Mathematical Society, edited by J. Lewis, S.-T. Yau and myself. All articles will be refereed.

For my own research, two papers have originated from the discussions I had during the workshop, one of which will be included in the Proceedings.

202 Kevin Milligan, Assistant Professor of Economics, University of British Columbia

I participated in a conference at BIRS called Microeconomics of Spatial and Grouped Data in April 2004. I found the facilities and staff to be excellent. We were able to concentrate on our scholarship when we desired, and also relax when we wanted to. I interacted with a number of excellent microeconomists at the conference; renewing and developing ties that have already paid professional dividends. The paper I jointly presented at the workshop is in review at the Journal of Econometrics, where we have been requested to send a revision. Our paper benefited greatly from the interactions with others at BIRS.

203 Stephen Berman, Department of Mathematics, University of Saskatchewan

Here is my "testimonial" for BIRS. I hope it is of use to you and that you are successful with your proposal. I think BIRS serves a special role within the community and plays an important part in facilitating mathematical developments. Best Wishes Stephen Berman

In late September 2004 I attended a workshop at BIRS on "Interactions of Finite Dimensional Algebras with other areas in Mathematics". As the title suggests this workshop did not consist of one homogeneous group of researchers, but rather, people working on many diverse areas which touch on the central theme of the meeting. The fact is that there has recently been a lot of cross fertilization between quantum theory, infinite dimensional Lie theory, representation theory, and finite dimensional algebras and this meeting was planned so as to enhance this interaction. As such it was most successful.

The meeting served to help educate me about recent research in areas which, although not my own , have a strong interaction with it. This is not a small point as it is notoriously difficult to learn about new developments in a vacuum by oneself. Rather one needs to talk to the people who did the research. I made new contacts at the meeting and also found many people, not in my direct area of research, who had an interest in some of my recent work. Most people at the meeting had similar experiences. In short, I think BIRS provides a wonderful opportunity for mathematicians to interact and learn from each other. I see very few other places where this kind of in-depth interaction takes place (certainly not in the rushed AMS special sessions which leave even the experts in a trail of dust) and think BIRS thus plays a special role within North American mathematics.

204 Michael Eastwood, Department of Mathematics, University of Adelaide

I am writing to express my thanks to BIRS for hosting two very stimulating workshops, which I attended in 2003 and 2004. Both were very useful but for quite different reasons. In July 2003 I attended the workshop "Differential invariants and invariant differential equations". I knew almost no-one at this meeting, though I had read articles by several participants. The conversations I had and contacts I made were invaluable. In particular, I was directed by Niky Kamran and Peter Olver to an unpublished PhD thesis of Peter Delong from 1982, which was very much related to what I was spoke on at the workshop. Comments from Ian Anderson were very useful in an article that I was writing with Jan Slovak. There are other ideas and correspondence initiated at the workshop that have yet to be followed through. All in all, one of the most useful meeting I have attended. In August 2004 I was an organiser of a workshop on "Conformal geometry". This was a totally different experience since I knew personally most of the participants (and completely understood almost all of the talks!). The talks brought me up to date with the latest developments, exactly as one would hope. Informal discussions were very useful, the most fortuitous being with John Bland on the bus trip back to the airport. He sketched an idea, which we have since discussed at a conference in Beijing. As a result of these conversations, he will visit soon me in Adelaide and we shall spend six weeks working together on this. At the workshop, Thomas Branson, Andreas Cap, Rod Gover, and I put the finishing touches to an article "Prolongations of geometric overdetermined systems". This involved some quite animated discussions (not possible by e-mail). The facilities at BIRS are wonderful. Certainly, the workshops I have attended have been lively and inspiring. I only wish they were a little longer.

205 Frederick Cohen, Department of Mathematics, University of Rochester

My visit to BIRS was extremely interesting and pleasant.

There are at least two projects which started, and would not have happened without my visit to BIRS. Some details are listed next.

I learned interesting mathematics cutting across several areas at this conference. I was able to learn directly by speaking with T. Kohno, G. Lehrer, D. Krammer, S. Bigelow, as well as a student of Dale Rolfsen who gave a lecture at the conference.

Gus Lehrer, and I started to look at an overlap with algebraic groups, their representations, and group cohomology. We have started work on a problem arising from "centers of mass" in hyperplane arrangements.

Toshitake Kohno raised some very interesting questions about the cohomology of the braid groups with certain twisted coefficients, together with their connection to quantum groups. We are starting to work together on this problem.

BIRS is a fine mathematics institution which should foster significant development of mathematics. My visit was certainly very valuable.

206 Michael Baake, Professor of Mathematics, University of Bielefeld

With this message, I want to express my gratitude towards BIRS, which in my opinion is a great addition to the mathematics landscape worldwide, and from which I have profited in many ways by now.

I have seen it being planned at various stages, and had always thought that it is overdue to have an institute like Oberwolfach in North America. Amazingly enough, no such thing existed, and PIMS did very well in establishing it.

I have been up there several times by now, both as a participant and once as an organizer, and think that it is extremely successful. In fact, it might have turned already into some of the best known places in Canada by now.

The nice atmosphere and the high standard of the meetings combine into a unique and perfect environment to foster mathematical research, and I hope that it can continue to add to the excellent reputation of Canadian science in general and mathematics in particular.

In fact, I sincerely believe that its funding should be placed on a permanent (or at least very long-term) basis right away, as I cannot think of any better value-for-money relation in research and higher education at the moment.

With best regards, and best wishes for a successful continuation of the BIRS legacy

207 Jan Minac,Department of Mathematics, Middlesex College, The University of Western Ontario

It is a pleasure to respond to your e-mail message about your proposal which is concerned with the renewal of BIRS.

I was a co-organizer, with R. Elman, A. S. Merkurjev, and C. Riehm, of a BIRS workshop entitled, "Quadratic Forms, Algebraic Groups, and Galois Cohomology," and which was held October 4-9, 2003. It was really quite a fantastic workshop and I once again came to appreciate the wonderful, friendly atmosphere at BIRS where there are truly ideal conditions for carrying out exciting research in mathematics.

All of the people with whom I spoke were truly very happy at BIRS and they enjoyed the workshop very much. The workshop was very active and productive. In fact in this workshop V. Voevodsky announced a solution of the Bloch-Kato conjecture - a milestone in current mathematics. There were quite a few other important developments which originated from this workshop. In particular the work of N. Karpenko, A. S. Merkurjev, M. Rost, and A. Vishik on quadratic forms and Chow groups has formed a virtual revolution in the current theory of quadratic forms. And the Banff International Research Station has played a crucial role in the realization of these quite significant developments!

For my collaborators - N. Lemire, A. Schultz, and J. Swallow - as well as for me - a dream came true when we recently succeeded in determining some Galois cohomology as Galois modules in a very explicit manner. This was our key problem which we had discussed in the BIRS workshop mentioned above (October 4-9, 2003). Our discussions carried out at BIRS were important to our later success in solving this problem.

Very recently with my collaborators - A. Adem, D. Karagueuzian, and J. Labute - we achieved a significant breakthrough in the structure of Galois groups. This breakthrough is a direct consequence of our collaboration together while participating in the BIRS event "Research in Teams" in 2003 ("Field Theory and Cohomology of Groups," April 26 - May 10, 2003).

I want to thank you once again for having provided such outstanding conditions wherein fellow mathematicians may gather together from all over the world, and work together creating many new and stimulating mathematical ideas, leading to still more exciting research work. Certainly BIRS is helping mathematicians succeed in very important ways with their research ideas, goals and innovations.

To conclude, I can state with absolute certainty that BIRS has been very important to my research, as well as to the research of my colleagues. Working at BIRS with colleagues and collaborators has been productive, stimulating, and enjoyable.

208 Raymond J. Spiteri, Department of Computer Science, University of Saskatchewan

I am writing in support of the renewal of the Banff International Research Station. I have just participated in my first workshop at BIRS, but I have been aware of it even from the days when it was still in the planning stages many years ago. My enthusiasm for BIRS is no less today than it was then.

Rather than extolling the virtues of BIRS at great length, I will summarize what I feel are the 3 most important reasons why BIRS should be renewed.

1. BIRS is the only instrument of its kind in North America. This gives Canada a place on the stage of international research. More and more people around the world are recognizing Canada as a place where top-notch research is carried out. The absence of the venue that BIRS provides would certainly do damage to our international research reputation, especially with respect to our commitment to supporting fundamental mathematical research.

2. The fact that BIRS is so heavily subscribed to is a testimony in itself that the institute is making a difference. Proposals typically must apply over a year in advance before they can take place. The selection process then ensures that only the best of the best are hosted at BIRS. To have such an instrument disappear now would mean that either these meetings would have to move elsewhere (and in all likelihood out of Canada) or they would simply not take place. This would be a terrible shame for mathematics and the spirit of community among the researchers, particularly Canadian researchers.

3. Finally, BIRS makes a difference to researchers like few other instruments do. The workshop I attended was a MITACS Theme Meeting, at which 4 different MITACS projects met to discuss their respective research projects and attend a workshop on a common theme. Individual projects also took advantage of this time to meet by themselves. The meeting was of critical importance in establishing short- and

medium-term research priorities, goals, and specific collaborative efforts within our own project. Moreover, I personally established 2 collaborations with other projects. It would have been much more challenging to make such progress under normal conditions at a meeting, where facilities are less abundant and convenient and venues for discussion (e.g., at meals and coffee breaks) are more limited. BIRS greatest strength to the individual researcher is that it is a unique place where one can go to focus only on research. We are very fortunate as Canadians to have such an instrument in our own backyard.

I hope that testimonials such as these will allow BIRS to secure funding for its continued operation.

209 Edmund Copeland, University of Sussex

I participated in the String Cosmology meeting in June and sent the following reply to Jim Cline. I think it may be what you are looking for. There are no papers from me which have resulted directly as a result of the meeting, but I am hoping to return to Banff with a small group of people in the future to collaborate on a project.

210 Edwin Perkins, Department of Mathematics, University of British Columbia

I write as an organizer of a workshop on Stochastic Partial Differential Equations in 2003 and as a participant in a 2-week Research in Teams effort in the summer of 2004. Simply put it is a fabulous environment for discovery and interaction.

I will focus on the second activity. Rick Durrett, Leonid Mytnik and myself had been working pairwise on a scaling limit theorem for a spatial stochastic model for competing species in mathematical ecology. It was essential for all three of us to get together to finish the project. We scheduled the two-week activity to overlap with a meeting on population genetics, which also interested all of us and provided additional stimulus and potential interactions. During the two weeks we found a serious error in our earlier work, corrected it, worked out the one-dimensional case completely (admittedly much simpler than its 2- and 3-dimensional counterparts where the fundamental uniqueness question remains unresolved in general) and essentially completed a draft of the paper, "Competing super-Brownian motions as limits of interacting particle systems". It has since been submitted to the Elect. J. Probability.

Ted Cox was a participant in the genetics meeting and I had been working with Ted on some different Lotka-Volterra models. We had managed to obtain a scaling limit and apply it to the question of co-existence of types in the regime where the types prefer to be surrounded with the other type. The co-existence question in the other regime seemed to require a high density limit theorem which was different from ours. We had some guesses as to what the limiting reaction diffusion equations was and one afternoon brought this up with Rick Durrett. We did not think Durrett's earlier work would apply here but after several hours discussion on a couple of separate days it became clear that it did, and we (well Rick) found the limiting equations which were not what we had expected. Still they would predict what we were interested in showing: a discontinuity in the derivative of the critical survival curve at the point where this phase transition between type preferences takes place. There is a lot that remains to be checked of course but we now have a clear program to follow as the result requires both Durrett's earlier techniques and the coalescing random walk calculations Ted and I had been doing.

The point of course is that BIRS provided an engaging environment where we could complete one project and find a very promising path for another.

The facilities at BIRS are fabulous. The computing facilities are easy to utilize and the staff extremely helpful. Organizing meetings is painless and the location means you may expect a very high percentage of your invites to be accepted (we had 30/32 accept). Meeting with other scientists at BIRS allows one to completely engage in science in a way that is just not possible at your home university where there are always administrative and family duties to attend to. PIMS, MSRI, NSF, NSERC, the Banff Centre and the Alberta government should be very proud of their joint creation.

211 Eric Shea-Brown, NSF postdoc, Courant Institute

I was a participant in the 2003 Workshop in Symmetry and Bifurcation in Biology, which was without question one of the best meetings I have ever attended. As a direct outgrowth of our discussions at BIRS, I am now collaborating with one of the workshop organizers, Marty Golubitsky, and another of the attendees, Kresimir Josic, on a paper in progress

entitled "Symmetric Networks of Phase Oscillators." This project draws on our different levels of experience and background in algebra, dynamics, and mathematical neuroscience. In addition, I still benefit from the many discussions I had at BIRS over coffee and into the nights, during which many of the fundamentals of equivariant dynamics were explained to me by more senior attendees. I would jump at the chance to immerse myself in the BIRS workshop environment again.

212 Krzysztof Oleszkiewicz, Warsaw University

The conference on convex geometry in Banff I participated in last summer was very well organized and very fruitful in scientific sense, as far as I can judge. It was a good (and rare) opportunity to learn what the world-class specialists in this field work on.

Let me praise the unique atmosphere of the Banff center and the wonderful landscapes. The accommodations and food were perfect.

I am sure that BIRS activities serve very well the mathematical community.

213 Suresh Nayak, Chennai Mathematical Institute, Chennai, India

I am writing this letter to acknowledge the enormous help I received from the BIRS programme in 2003 for my research.

In August 2003, via the Research-in-Teams programme, I had the opportunity of mathematically interacting in person with Joe Lipman of Purdue University and Pramath Sastry of University of Toronto. The occasion for three of us to meet together in one place came at an important stage in the production of a volume (book) of three research papers by us. The discussions in Banff spread over two weeks enabled us to push a jointly coauthored manuscript towards its final stages and also helped me gain valuable inputs for a separate work of mine. I am happy to inform that both these papers have now reached the publication stage.

I strongly encourage BIRS to continue their present efforts and provide similar opportunities to other research groups.

214 Mathematisch Instituut, University of Utrecht, Utrecht, Netherlands

Herewith I would like to express my support for BIRS.

I participated in the BIRS workshop 03w5061 Calabi-Yau Varieties and Mirror Symmetry in December 2003.

I found that BIRS had created a very stimulating atmosphere. The workshop was small scale and all participants were staying in the same building. This made it easy to meet people also at dinner and in the evening and thus get engaged in informal discussions. Such informal discussions in turn are important to make new contacts and to hear about participants' expertise and interests which are maybe not presented in formal talks.

I personally was stimulated through one of those informal discussions to present some results of my research in an after dinner evening talk (1 hour) and to write part of it in a paper for the workshop proceedings.

215 Shihoko Ishii, Tokyo Institute of Technology

I stayed in BIRS for one week of June last year. It was really stimulating experience for me to stay there. Actually I learned many new ideas from other participants' talk. We exchanged our ideas and as a result I could developed the discussions into a new paper which will be published in Journal fuer reine und angewandte Mathematik. This is due to the chance you gave me to stay in BIRS. I hope BIRS will have a good financial situation forever.

216 Etienne Blanchard, Institut de Mathematiques

I send you a short description of my stay at BIRS last month for a workshop on The structure of amenable systems.

There was quite an intensive programme with many talks (8 per day) But most of the participants could not attending all the talks (apart from the organizers). You had the opportunity to read the different abstracts sent by the speakers, to choose which ones you would attend, to learn from these speakers, to talk with them and then to make progress in your understanding of our mathematical questions.

The very nice atmosphere in Banff (food, classical concerts, visits in the mountains) also gave us the possibility to relax and to 'find by accident' new inspiring ideas to solve our mathematical problems.

217 Marcelo Aguiar, Department of Mathematics, Texas A & M University

I participated in a 4 day meeting at BIRS in August 2004. It was a very positive experience. I started a number of research projects in collaboration with various authors, some of whom I met for the first time there. The conditions were excellent. I hope to participate in or organize similar workshops in the near future.

I hope the funding agencies make supporting BIRS a priority.

218 Elvezio Ronchetti, Chair, Department of Econometrics, University of Geneva, Switzerland

I participated in a workshop at the Banff International Research Station in 2004. It was a very successful focused group workshop on the data analysis of large data sets. As a side effect it helped me to set up a collaborative research effort with some colleagues in the area of financial modeling where large data seta are a key issue. More generally, the Center is located in a beautiful environment which stimulates many discussions and informal contacts and its management is very efficient and friendly. It is indeed a successful example of cooperation which should inspire similar efforts elsewhere in the world.

219 Matthias Gaberdiel, Institut fuer Theoretische Physik, ETH Hoenggerberg

I visited BIRS in the autumn of 2003 and the spring of 2004 to take part in the 'Research in Pairs' programme 'Modular invariants and NIM-reps' with Professor Terry Gannon of the University of Alberta. I found both visits very stimulating and useful. The working conditions at BIRS were excellent, and we were able to concentrate fully on our research. Terry and I had worked together before, but it was extremely useful to be able to spend some uninterrupted time together to work out various vague ideas we had had before and to begin new lines of thought. (While at certain stages of a collaboration it is possible to work at a distance via email, it is sometimes crucial – in particular, at the beginning of new projects – to be able to talk directly; this is what we were able to do in Banff.)

The four weeks we spent at Banff were extremely productive. As a result of both research visits, we were able to make significant progress on problems that had been around for some time. In particular, we could prove that the charges of the twisted branes give rise to the same charge group as for the untwisted branes. We also studied the charges of branes in non-simply connected group manifold, and found intriguing constructions for the D-branes that carry the remaining charges (for SU(n) with n greater than 3). More explicitly, the relevant papers that originated from our research visits to Banff were

M.R.Gaberdiel, T. Gannon: The charges of a twisted brane, J. High Energy Phys. 0401, 018 (2004); hep-th/0311242.

M.R.Gaberdiel, T. Gannon: D-brane charges on non-simply connected groups, J. High Energy Phys. 0404, 030 (2004); hep-th/0403011.

M.R.Gaberdiel, T. Gannon, D. Roggenkamp: The D-branes of SU(n), J. High Energy Phys. 0407, 015 (2004); hep-th/0403271.

M.R.Gaberdiel, T. Gannon, D. Roggenkamp: The coset D-branes of SU(n), J. High Energy Phys. 0410, 047 (2004); hep-th/ 0404112.

I hope this is of help — please let me know if you need any further information.

220 Isaak Rubinstein, Energy and Environmental Physics, J. Blaustein Institute for Desert Research, Ben-Gurion University of the Negev, Israel

This is to testify that I did find the workshop on Computation Fuel Cells Dynamics II at BIRS (May 2003) I participated in highly stimulating. It provided me with a unique opportunity to meet in one place in

informal atmosphere a selection of leading experts on fuel cell modeling.

221 Peter Swain, McGill University

I attended the 'Dynamics, control and computation in biochemical networks' at BIRS during august 2004. The workshop was invaluable in bringing together control theorists, mathematicians, physicists, and biologists. I am an applied mathematician and am excited about the new contacts I made with people in control theory, whom I'm sure will give me a novel insights into my own work.

222 Yi Zhang, Center of Mathematical Sciences, Zhejiang University

I strongly support BIRS. I very like BIRS, I have benefited from joining the Workshop "Calabi-Yau varieties and Mirror Symmetry" held in Dec2003. I got flash ideas in BIRS and knew many good mathematicians. Best regards,

223 Tore Schweder, Department of Economics, University of Oslo

I did indeed participate in the BIRS Point Process workshop in the summer of 2003. And it was a most stimulating experience.

I learned about active areas in the theory of stochastic point processes, and particularly about methods of analysing point process data. I also got valuable feedback on my own contribution concerning Hawkes processes and line transect surveys of whales. This has lead to a paper which was submitted to JABES. Without the workshop, I would probably not have been able to get my co-author's attention, and there would have been no paper.

224 Andrew Ranicki, School of Mathematics, University of Edinburgh

I attended two meetings in BIRS this year 20-25 March 04w5533 Topology of Manifolds and Homotopy Theory 8-13 May 04w5037 Knots and their manifold stories Both meetings were great successes, giving me an opportunity to meet and talk to many mathematicians in my field. Even in this electronic day and age there is ultimately no substitute for direct contact! In addition, there was the wonderful setting of Banff and the Conference Center, and the friendliness of the staff. I feel very fortunate to have also been invited to a BIRS meeting next year 27 August - 1 September 05w5067 Topology accepting the invitation with great alacrity.

Long may BIRS flourish!

225 John E. Cremona,School of Mathematical Sciences, University of Nottingham, UK

Thanks for a fantastic conference which I thoroughly enjoyed. I will send you a longer abstract of my talk shortly. Amongst the many interesting and useful conversations I had I can include: progress on an ongoing collaboration with Michael Stoll and Cathy O'Neil took place at the meeting; and also I had a very stimulating long conversation with Manjul Bhargava on the last evening concerning extensions of his higher composition laws to higher dimensions (which is work he is currently doing with Cathy O'Neil).

226 Herbert Abels, Bielefeld University, Germany

I participated in the workshop on new techniques in Lorentz manifolds at BIRS from November 6 to November 11, 2004. I enjoyed it very much. The environment that was created by the research station and its staff was very stimulating. I met a number of people that I had never met before or had not seen for a long time. The talks and the discussions were very good and made me acquainted with work that I had not seen before. Particularly useful were the discussions I had with W. Goldman, T. Drumm and V. Charette on the topic of 3-dimensional spacetimes and with F. Labourie on his joint work with W. Goldman and G. Margulis on a generalization of the Margulis invariant. Both of these topics are close to my own research work and I am sure the new input will turn out to be fruitful for my own work. With W.Goldman I also discussed and actually showed him the manuscript of a book on proper transformation group that I am writing together with P. Strantzalos.

I sent him a copy and hope to continue the discussion about it with him and get further feedback from him.

So in all the conference was very fruitful for me. It gave me new insights, ideas and perspectives, let me renew old contacts and created new ones and started some discourse on research and publications.

Not to forget, my wife and I enjoyed the magnificent landscape. We added a few days in Banff to explore it on hikes.

I am very thankful to BIRS for affording this magnificent opportunity for meeting and having scientific encounters.

227 Yuanan Diao, Professor of Mathematics, Department of Mathematics, UNC Charlotte

Last year, I was a participant in the Random Knotting, Workshop in Statistical Mechanics of Polymer Models which was held at Banff International Research Station. This week long workshop brought many researchers from several research areas and provided a very nice opportunity for us to interact. During this time, I was able to finish an on-going research project with several of my collaborators (they were all invited to the workshop by the careful selection of the organizers). I was also grateful that during the discussions with my other colleagues, I have found a few interesting topics to explore further. Although I was asked by the organizer to give a introductory style talk about random knotting, the audience actually asked many interesting questions during my talk, which to me is a real eye-opening experience. I am happy to report that I have published seven papers since I visited Banff last May, three of them were related to the activities initiated at BIRS (the references are given at the end of the email in case you need them). I give my full support for your effort to renew and expand the operations at BIRS and certainly would like to be a participant again in the future.

228 Mohammad H.S. Amin, D-Wave Systems Inc.

I attended a BIRS meeting at Banff in Apr. 2003. The meeting in general was very interesting and helpful. I had a chance to meet a number of prominent scientists including Tony Leggett, who won the Nobel prize in physics that year. I was able to talk to Leggett for a few hours describing my work on nonequilibrium superconductivity, which seemingly was impressing to him. I got a number of excellent remarks from him which improved my paper and helped me on a new work which later was published in the Physical Review Letters (the most prestigious physics journal). In general, I think my participation in the BIRS meeting was very helpful and had important impact on my research carrier.

229 Tomas Gedeon, Associate Professor of Mathematics, Department of Mathematical Sciences, Montana State University

I would like to add my voice to strongly support continuing funding for BIRS. I have participated in three workshops in the last two years. The organization and the support of the staff was flawless. I also strongly believe that the workshops of small size, with no multiple sections like those supported by BIRS are much more conductive to original research and collaboration then big monster conferences. I also enjoy the fact that all participants are treated equally financially, there are no plenary speakers and there is no conference fee.

This was a brilliant idea and continues to be a brilliant idea. I hope to be coming back to Banff for years to come.

230 Shiri Artstein, Princeton University

I have participated in a conference on the geometry of high dimensions last summer at Banff, as a PhD student in the final stages of the dissertation. I am now a Veblen postdoc at Princeton University and the Institute for Advanced Study. The conference gave me a chance to present a large portion of my work to experts in mathematics who share my interests. It was very beneficial, and the comments of people in the community, the top scientists in the field, which attended the conference, were helpful and influential. The facilities and the arrangements were wonderful, and I look forward to attending another Banff conference.

231 Christophe Croux, Department of Applied Economics, Katholieke Universiteit Leuven, Belgium

I participated to the focussed workgroup "Robust Analysis of Large Data Sets", from June 5 - June 19, 2004 in Banff. It was really a fabulous research experience. Plenty of time to talk with other researchers in an informal atmosphere, time for in-depth discussion, ... The International Research Station is perfectly equipped and extremely well organized.

As a result of the workshop, I started a research project together with Ruben Zamar, on robust correlation measures. Another one that started off in Banff was together with Peter Filzmoser, on Robust continuum regression that will appear soon in a journal.

232 Jim Cline, Department of Physics, McGill University

I was an organizer for the workshop "New Horizons in String Cosmology," which BIRS hosted during June 12 - 17, 2004. For me and for many participants who enthusiastically praised this venue, the workshop was a highly stimulating opportunity for exchange of ideas and fostering new collaborations. During this workshop Cliff Burgess, Fernando Quevedo and I joined forces with Andre Linde and Renata Kallosh to produce a paper we called "Racetrack Inflation," which arguably is one of the first successful attempts to create an inflationary model using moduli of the extra dimensional Calabi-Yau manifold of string theory, within a rigorous and theoretically controlled framework. This collaboration would not have happened without the workshop at BIRS.

I received very positive feedback from participants. Here are some examples.

Andy Albrecht, UC Davis:

"In terms of specific science issues, I feel this meeting was a real turning point. For the first time I felt that a large number of string theory people were ready to focus on very cosmological questions. One important impact of this meeting is that I feel much more connected to the string community, and inclined to engage members of this community in the future."

Geraldine Servant, CEA Saclay:

"The facilities at Banff were amazing. It is a wonderful site for organizing workshops. The number of participants was perfect. This size of workshops is really adequate. It was a good thing that you incorporated some young physicists, including graduate students. It is very stimulating for young scientists to be surrounded by top quality physicists in an informal setting. The workshop also benefited from the diverse group of participants."

Ed Copeland, Sussex:

"I found the meeting not only enjoyable but also very stimulating. The relaxed atmosphere throughout the meeting meant that people were more than happy to discuss the aspects of string cosmology that they found most challenging and uncertain. This was so refreshing. All too often we attend meetings where we feel the need to make it sound like the subject has been sorted out thanks to our latest masterpiece. This was not like that. I don't mean to imply the work presented was not of a high standard. I found that stimulating. In particular the attempts presented by Fernando, Andre, Renata and Eva to obtain inflation in string theory, and the search for observational signatures of strings are exciting developments."

Alan Adams, Harvard University:

"...Much more important than any concrete progress reports, however, were the many intense and entertaining personal interactions between cosmology- and string-minded physicists; if any of the above challenges are to be fruitfully addressed, it will likely be the result of precisely these sorts of mind-opening interactions, as well as the collaborations to which they merrily lead."

233 Volker Mehrmann, Institut fr Mathematik, Technische Universitt Berlin

I happily confirm that the meeting in Banff that I participated was highly fruitful and particularly helpful in my current research. During that meeting two major papers that are just being completed were developed a great deal further. Without this possibility and the nice and friendly atmosphere at BIRS as well as the great facilities this would not have been possible.

234 Beni M. Sahai, Senior Scientist (Virology), Cadham Provincial Laboratory, Manitoba

I have participated in two research workshops, in 2003 and 2004, held at the Banff International Research Station (BIRS) on the Mathematical Modeling of Infectious Diseases. I found BIRS to be an exceptionally well-organized and suited venue for holding workshops and research meetings that aim to achieve intensive interactions among participants under highly personable and serene atmosphere. Consequently, meetings at BIRS lead to lasting impact as evident from new research collaborations and scientific publications generated based on such collaborations (for example, see: Gumel et al., Modelling strategies for controlling SARS outbreaks, Proc Royal Society Series B, 2004; 271:2223-32; and current ongoing collaborative research on influenza by our group). I therefore strongly support the renewal and maintenance of this one-of-a-kind international resource.

235 Christian Krattenthaler, Institut Girard Desargues, Universit Claude Bernard Lyon 1

I participated in the Workshop "Recent advances in algebraic and enumerative combinatorics" at BIRS in May 2003.

The workshop brought together participants from different fields having interactions with combinatorics. Thus, in the talks, one was confronted with ideas that one would not usually see at a "normal" Combinatorics Conference.

I still remember the stimulating atmosphere among the participants during the workshop. There, I had my first encounter with Persi Diaconis. Indeed, he gave me several extremely useful hints and references regarding the paper of mine that I presented (Asymptotics for random walks in alcoves of affine Weyl groups) and another one (Watermelon configurations with wall interaction: exact and asymptotic results).

On a personal side, I also appreciated very much the arrangement that one is next-to-door to artists, myself having been a pianist "in my previous life".

236 Mayer Alvo, Department of mathematics and Statistics, University of Ottawa

As Chairman of the Department of mathematics and Statistics at the University of Ottawa I had occasion to attend a meeting of Chairs of Mathematics at BIRS in 2003. It was beyond doubt of the best facilities for a meeting. The staff was very professional and the accommodations superb to say nothing of the wonderful setting in Banff. Our meeting went extremely well as we had a chance to interact in a quiet environment, un-encumbered by the hustle and bustle of city life. The participants were able to the discuss various subjects freely at different hours in the day. The facilities at BIRS are to be envied and should be preserved. They serve as a model in Canada and no doubt elsewhere in the world.

237 Uwe Beuscher, W.L. Gore & Associates, Inc.

This letter is in support of the Banff International Research Station (BIRS). I have participated in a workshop at BIRS in 2002 and have enjoyed it beyond my expectations. The facilities were outstanding and provided a wonderful environment for a stimulation exchange of ideas and discussions well beyond the daily schedule. The unique setup at Banff encourages interactions from early in the morning at the breakfast table until late at night. The staff is very helpful and forthcoming and the facilities were well prepared. I am still benefiting from the connections that were made during the workshop almost two years ago. A follow-up workshop is planned for this March and I would not dare to miss it. Thank you for providing such a wonderful facility and I wish you all the Best for the future.

238 Jean-Charles Grégoire, Institut National de la Recherche Scientifique, INRS-Energy, Materials and Telecommunications

I am quite grateful for the flexibility and the quality of the environment provided bu BIRS. For my first experience, it was an opportunity to participate to a

gap-bridging meeting which has led me to start research work with a new partner in a complementary discipline. The BIRS formula allows organizers to take more chances in attendance-mix, which may in turn lead to new research perspectives on old problems. I do hope BIRS will be able to expand its programme.

239 Joseph Wolf, Department of Mathematics , University of California-Berkeley

I was a participant in the PIMS program on locally finite Lie algebras at the end of Summer 2003. The program was very valuable for me, because the area was moving rapidly and communication between researchers was very much needed. It was needed especially by those of us whose work is not strictly algebraic and who consequently had not been able to keep up with latest developments. Also, I was very much impressed by both the organization and the facilities; definitely a first class operation. The net result of this fine infrastructure was that most of the lectures were very much to the point and most of the free time was devoted efficiently to scientific interchange.

240 Jan Zwicky, poet, Department of Philosophy, University of Victoria

BIRS has indeed been exceptionally stimulating for me. I attended a workshop on mathematics and creative writing, and made a number of new contacts that have since provided me with superb leads for my own research. Indeed, a whole new area of research has opened up for me as a result of my participation, and I am extremely grateful for this. The workshop also provided me with an opportunity to present my work to mathematicians, and I found their keen interest both surprising and inspiring.

I hope very much that BIRS will be able to expand its operations to 48 weeks per year.

241 Yoshihiro Tonegawa, Associate professor, Department of Mathematics, Hokkaido University, Japan

I participated in the summer one-week program 'defect and their dynamics'. There, I saw Chun Liu from Penn State Univ. whom I knew from the time at graduate school but whom I had not kept contact. After hearing my talk, he started talking about some applications of my result to what he had been interested in. The contact has resulted in our present collaboration of phase interface motion which has both surface tension and hydrodynamic effects. We have been working on some other projects as well, such as approximating Wilmore functional using the phase field approach. This contact has been particularly valuable for me.

242 Kyewon Koh Park, Department of Mathematics, Ajou University

I have participated the Workshop on Joint Dynamics organized by D. Lind and D. Rudolph, June 29 - July 3, 2003. It was a great opportunity to meet people in the field, specially young people. I invited one of them to Korea and hope to have a joint work with him.

In Korea, we have right now great possibility of establishing the first mathematics institute. The experience at BIRS was so great that I gave the name BIRS to the Ministry of Science and Technology of Korea as one of the few places to benchmark for our Institute. I hope that we will visit the place again to learn how it is run.

243 George Karakostas, Department of Computing & Software, McMaster University

I participated in a BIRS workshop this past summer (CAAN 2004). As a result of the workshop connections, we managed to put together a MITACS

project, based on the common experience and research expertise of some of the participants. This proposal has already been forwarded to the current funding decision phase of MITACS, and it wouldn't exist if not for the interaction at BIRS.

244 Greg Stinson, Astronomy Department, University of Washington

As a young scientist, my experience at BIRS was invaluable. I attended my first meeting on galaxy formation with all the astronomers who will possibly be colleagues for the rest of my career. I didn't come close to understanding every talk, but in hearing all of the key words, I found out what I need to know the next time I attend a conference with my peers and have done several talks in my department on those subjects so that I could learn what was being discussed at the Banff meeting. I met several of the luminaries in my field and now when I look at articles, I can attach faces to the names of some of the authors and the material seems somehow less intimidating.

All of this learning was made more comfortable by the outstanding setting. I still (one year after the meeting) recall fondly the single rooms with internet terminals and comfortable beds, though I am still perplexed by the two button toilet. The meals were outstanding and I got the chance to meet just about every meeting participant on a more casual level and talk about such random topics as shopping in Germany.

I will also admit that I attended another meeting this past September in Aspen. While the rooms were big and the aspen trees turning, I found that the experience did not measure up to Banff in scenery and in the necessity to go to town for meals rather than enjoying food right on the institute campus.

Banff was a wonderful experience that will always hold the special place of being the first meeting I attended and I look forward to my next chance to attend a meeting there.

245 Jim Little, Department of Computer Science, University of British Columbia

I was lucky enough to be invited to a BIRS meeting: Mathematical Image Analysis and Processing Dates: October 23 - 28, 2004 Organizers: Mary Pugh (University of Toronto), Selim Esedoglu (UCLA), Sung Ha Kang (University of Kentucky), Jackie Shen (University of Minnesota)

I am at best a user of the mathematical results of those in the workshop, at least recently, but enjoyed the talks at the meeting immensely. I found an excellent mix of more theoretical and more applied mathematicians as well as some practitioners of computer vision, my speciality. I met several people whose papers I had read, and as well made contact with Andrea Bertozzi of UCLA who shares an interest in mobile robotics with me. Finally I gained a renewed appreciation for the foundational work that these mathematicians are doing in an area close to my research.

BIRS itself as a site is terrific - beautiful, austere but close to the pleasure centre of Banff, and reasonably accessible. A great experience and one I'd repeat again gladly.

I hope to put together a proposal for a workshop in the near future in my area, too.

PS if you need any amplification of this please feel free to contact me.

246 David Rocke, University of California-Davis

I attended a statistical genomics workshop in the summer of 2004 at BIRS, and found it an exciting, useful meeting. Several research collaborations have resulted from this meeting, and I plan to attend additional ones in the future if the opportunity arises.

247 Peter Jagers, Chalmers University of Technology

I participated in the BIRS week about stochastic processes in genetics in August 2004.

Technically this was a very well organized event. But content was the most important. I met with new problem areas, in particular about fitness evolution, and the intersection between genetics and population dynamics in general, For lack of time this has as yet only resulted in my carrying around a bunch of papers in my back pack, but I am convinced that new insight into the important area of biological evolution will come out of this week, through my research or other peoples.

BIRS is ideally suited for such events which are cross-disciplinary, but still on a high and strict scientific level.

248 Henk Broer, University of Groningen

In 2003-2204, during a sabbatical year I visited the Banff Center for a workshop on symmetry in life sciences modelling, coordinated by Martin Golubitsky and Bill Langford. I enjoyed the meeting a lot and learned about all kinds of modelling: in population dynamics, genomics, etc. It motivated and stimulated me to carry on with my own life science program, which now contains 2 PhD students. In particular I was able to make contacts I would not easily have found otherwise.

The scientific environment is extremely good, including lodging and computer facilities. Also, the Rockys are very pretty, not to mention the elks. I think the place is quite comparable to the European setting of Oberwolfach.

I wish you good luck with the continuation !

249 Peter Schneider, Mathematisches Institut, Universitt Münster

so far I have participated twice in workshops at the Banff center. But the first time was before the BIRS had its own housing. The second time was in the summer of 2003. Both workshops were a very useful and inspiring experience for me. I grew up here in Germany mathematically in the tradition of Oberwolfach. The conferences and workshops there have contributed to my mathematical development in a way which can hardly be overestimated. It therefore has always struck me as quite odd that there existed no equivalent to Oberwolfach (and Luminy since 1981) in North America. I'm truly convinced that the BIRS now provides such an equivalent. Such places are invaluable. In a relaxed and inspiring atmosphere they foster research through the intensive exchange of ideas. In addition the workshops are an indispensable tool in the training of young mathematicians. Due to the geographical distance it is obvious that places like Oberwolfach or Luminy located in Europe cannot fulfil these purposes in a satisfactory way for mathematics in North America. To me it therefore seems crucial that the BIRS will be able to continue functioning and possibly will even expand its activities.

250 Terry Lyons, Mathematical Institute, University of Oxford

In my experience, these meetings, and the environment are fantastic. I feel privileged to have participated. They have stimulated my mathematics and increased my scientific motivation. Through contacts with colleges I have been able to use their expertise directly in my research.

251 Moty Katzman, University of Sheffield

My recent stay at BIRS had very tangible effects on my research. The ability to interact informally in such a wonderfully peaceful setting with colleagues in my field enabled me to learn about the problems they were tackling, to show my own work and to benefit from their feedback and collaboration. For example, I have learned from my colleagues in BIRS that a problem I had been thinking about for some time is related to one which was studied in the early 80's and I learned from my colleagues some techniques which might crack it.

While it is hard to pinpoint all the benefits from the meeting in BIRS, I have no doubt that they are very considerable and will impact my research. I look forward to my next visit to BIRS!

252 Norman Dancer, Justus-Liebig-Universitat Giessen

My visit to BIRS was very productive.The meeting was very well organised with a quite diverse group of mathematicians attending.I learnt a good deal on other approaches to problems in related areas. In particular,my work was considerably influenced by a discussion with Schatzman.This influence is on work which is continuing and some of this will be eventually submitted for publication.

253 Nancy Amato, Professor, Parasol Lab, Department of Computer Science Texas A& M University

I participated in a BIRS workshop in July 2004 on modeling Protein Stability, Flexibility and Motions. It has been extremely useful for my research. I think the most important aspect for me was to get a chance to spend serious time talking with researchers from other disciplines - this is just not possible in most other settings. In fact, all my interdisciplinary collaborations that are not with researchers at my own institution grew out of such interactions (week long workshop settings). Although it is a bit early to say for sure given that it was only a few months ago, I believe a multi-disciplinary collaboration between me (a computer scientist), a mathematician and a biophysicist will grow out of the BIRS workshop I attended. I also found it very beneficial to be able to bring one of my graduate students to the workshop - I know she was thrilled to spend that much time with senior researchers in other disciplines.

Please let me know of anything else I could do to help keep BIRS around. I think it is a wonderful resource and I would be happy to do what I can.

254 Merel Soons, Landscape Ecology Group, Department of Geobiology, Utrecht University, The Netherlands

I would like to let you know that the workshops and small-group working groups at BIRS offer a unique opportunity to really get to work. The facilities at BIRS are optimized for carrying out simulations, analyzing data, having discussions, and writing papers (as opposed to almost all other places, which usually only facilitate having discussions). Thus, meetings at BIRS are much more productive than meetings elsewhere. I have experienced this myself and left a BIRS workshop with one paper partly written and others under way.

255 Hans-Otto Walther, Justus-Liebig-Universitat Giessen

being one of the organizers of the workshop on Functional Differential Equations (November 6-11, 2004) it is my pleasure to emphasize that BIRS and the Banff Centre are an ideal place for smaller meetings which concentrate on top research and are open to promising young scientists. A characteristic of the workshop on FDEs was perhaps that it brought together several people who had known each other's work before to some extent but not very intensely; the workshop led to a much better understanding. This refers in particular to the relationship between purely mathematical results and applied work (mostly in nonlinear optics, molecular biology, population models).

As a consequence of the workshop I began to work with a colleague in physics on aspects of a degenerate bifurcation problem (part of a Takens-Bogdanov scenario) which I had not touched before (asymptotic expansions). Also discussions at the workshop with a colleague in mathematical biology and with a further colleague, about fundamental problems for equations with state-dependent delay and a more functional analytic approach, may lead to closer cooperations. A Ph D student of mine who attended the workshop used the opportunity to meet the experts in the area and to make his work known.

It is important for mathematics to have research centers like BIRS - and pleasant. There are not many of these worldwide, so I do hope that your efforts to continue and extend the operation of BIRS are successful.

256 John Glasser, Centers for Disease Control and Prevention, USA

I participated in two infectious disease modeling workshops during 2003-04, and have agreed to participate in another next summer.

I am collaborating with a colleague whom I had only met briefly before the first of these. She will present some of our work next summer, by which time we hope that it will be in press. Internal review at the Centers for Disease Control and Prevention (CDC) can be painfully slow.

I have either discussed, or planned collaborations with others whom I met at the BIRS. I have presented some work at the Center for Discrete Mathe-

matics and Theoretical Computer Science and Mathematisches Forschungsinstitut Oberwolfach, and plan to present other work next summer.

Colleagues and workshops on infectious disease modeling are invaluable to me, as I am the only mathematical epidemiologist at the CDC.

257 Dan Zuckerman, Center for Computational Biology and Bioinformatics, University of Pittsburgh

The workshop I attended on protein flexibility was extremely valuable. I am a physicist who now works on computational biology, but I was very much in the middle of the spectrum (from math to biology) at the workshop, and I learned from both ends. There were top experimental structural biologists at the meeting who clarified many key points regarding the structures on which we simulators rely so heavily (too heavily, as it turns out!) and the mathematicians there taught me to think in terms of rigidity and constraint-counting. It is the best workshop I have attended.

258 Matthew Emerton, Mathematics Department, Northwestern University

I'm writing in response to your email regarding the upcoming application for renewal of support for the BIRS.

In August 2003 I attended the workshop "Current trends in arithmetic geometry and number theory". The workshop offered a mixture of research and instructional talks, both of which were of the highest quality. Furthermore, I found that the BIRS setting of the workshop encouraged fruitful collaborations and discussions outside the formal setting of the talks. In particular, during the week of the workshop, my collaborator Robert Pollack and I were able to make substantial progress on a joint paper. This paper, "Variation of Iwasawa invariants in Hida families", written jointly by Robert Pollack, myself, and Tom Weston, is now completed and has been submitted for publication.

I was one of the organizers of the workshop "p-adic variation of motives" in December 2003. Unfortunately, for personal reasons I was unable to actually attend this workshop. However, after it was over, I received email from several people, including Adrian Iovita and Jacques Tilouine, describing the workshop as "really good" and "important".

Overall, my experience shows that BIRS plays an important role as a host for mathematics workshops at the highest level, and I wish you the best of luck in having its funding renewed.

259 Angele Hamel, Wilfrid Laurier University, Alejandro Lopez-Ortiz, University of Waterloo

We organized a two day workshop, Combinatorics and Algorithms for Networking and the Internet (CAAN04), at BIRS from August 5 to 7, 2004.

BIRS was a major reason for the success of our conference. In fact we agreed after the workshop that BIRS and the Banff location was what made the difference between our conference just merely succeeding and succeeding well.

The staff were helpful and organized, both before and during the conference. They made our job easy. The facilities were all we could hope for, from the technology in the lecture rooms, to the accommodation, to the food and conveniences provided in the lounge. The proximity to Banff was a definite plus. We received numerous compliments from the participants on how wonderful the setting was.

From a scientific point of view the workshop was also a success. In one of the talks the presenter proposed a solution to a major outstanding problem in the field and there is now ongoing work to further evaluate the correctness of the solution. The Springer-Verlag series, Lecture Notes in Computer Science (LNCS), has expressed interest in publishing a volume dedicated to the workshop and consisting of the presented papers along with a number of invited survey papers. We anticipate that this volume would become a standard reference or graduate text in this emerging field. One of the most valuable outcomes of the workshop is the provision of a summary of the current research directions in this rapidly changing field. New collaborations are another possible outcome of the workshop. There was clear interest among the participants for further discussions and collaborations, although the interaction of the participants was somewhat limited by the short duration of the two-day format.

On the strength of the success of this workshop, we are planning to organize a follow-up workshop, CAAN05, as a satellite conference of the Workshop

on Algorithms and Data Structures (WADS05) to be held in Waterloo, Ontario in August 2005.

260 Francisco Marcellan, Professor of Applied Mathematics, Universidad Carlos III de Madrid

As a participant in the BIRS meeting on "Integrable Systems and Orthogonal Polynomials" held in Banff in March 2004 I would like to recognize the important consequences of my participation in terms of my research activity. First, I met there the top researchers in my area of interest. As a consequence, I was able to contact directly with them as well as to learn about the last research directions. Thus, new ideas for a future work were introduced and I hope I will able to do something with some of them in the next coming time. Second,the friendly atmosphere as well as the excellence of the facilities, which constitute a reference in the world community of mathematicians must be emphasized. Your example shows how good conditions yield good results and I would like to use your experience for our proposal of a research mathematical center in Spain. Finally, I would like to stress my support to the activity of the Pacific Institute for the Mathematical Sciences.

261 Gloria Mari Beffa, Mathematics Department, University of Wisconsin

I participated in a meeting at the Banff international research center two years ago, a meeting on the Theory of differential invariants and its applications (this is not the exact name, I am sure) organized by Niky Kamran and Peter Olver. The meeting was meant to bring together researchers in the theory of differential invariants (I study the geometry behind) and applied researchers who use it for their study. It was meant to bridge the traditional separation between both groups.

I think the meeting was a big success, at least from my own personal point of view. I met many applied mathematicians and I learned a lot about how the math I do is connected to interesting applications. After the meeting I had many quite long e-mail interactions with Professor Harvey Segur (from the Applied Math Department at the University of Colorado at Boulder) and learned a lot from them. He answered many of my questions and I tried to answered his. I also got introduced to the subject of image processing and the application of differential invariants to the design of image enhancing. After the meeting I became the unofficial consultant of the image processing group here at the University of Wisconsin, a group that consult with me about geometric problems. In particular I advised a graduate student in Engineering about integral invariants and its applications. The student wrote a very successful code for face recognition based on integral invariants and they are pursuing a patent for it. I believe the meeting in Banff had a lot to do with whatever interaction I have with the applied community.

262 Vince Carey, Assoc. Prof Med (Biostatistics), Harvard Medical School, Channing Laboratory

I was a participant in the BIRS Workshop "Statistical Science for Genome Biology" in August 2004. This workshop brought together statisticians, computer scientists, and bioinformaticians for a structured program of lectures on various aspects of statistical inference in genome science.

The setting and program generated protracted discussions and after-hours work by subgroups. I had no way to anticipate the ideal nature of the arrangement. The meeting brought to my attention work on a variety of topics that might otherwise not have been encountered: contributions from computer science to the evaluation of multinomial likelihood statistics; new bayesian approaches to sequence alignment.

I strongly endorse any plan to offer this opportunity to a wider population of researchers.

263 Don Dawson, School of Mathematics and Statistics, Carleton University

I am very pleased to support the renewal proposal for BIRS. I participated in two five day workshops during 2003-2004, first as participant and second as co-organizer of the workshop on "Stochastic processes in evolutionary and disease genetics". In both cases the workshops were of the highest quality. The Banff setting is ideal for an intensive five day workshop and

the facilities are excellent. This type of workshop is particularly valuable in bringing together researchers from related but different disciplines to focus on a research challenge at the boundary of these disciplines. In my capacity as co-organizer I was impressed by the exceptionally high rate of acceptance of invitations to participate and the many other expressions of interest in the workshop that we received.

264 Gerardo Emilio Garcia Almeida, Facultad de Matematicas, Universidad Autonoma de Yucatan, Mexico

I participated recently in a 5-Day Workshop at BIRS. This workshop was on mathematical image analysis and processing and it was an excellent opportunity to contact people doing research on this area. Here in the Faculty of Mathematics, Universidad Autonoma de Yucatan (Merida, Yucatan, Mexico) there is a group of mathematicians (me included) and computer scientists interested on this research area and we have a weekly seminar on this topic. After the workshop I commented them about the topics discussed in the workshop and showed them a video of one of the talks. Now we have a better idea how Mathematics can be applied for image processing and computer vision. We've had this seminar for a year and at the beginning for the mathematicians it was no clear how different branches of Math like Differential Geometry, Mathematical Analysis and Function Spaces are used for image processing and computer vision. On the other hand, people from Computer Science didn't have a deep knowledge on those areas of Math. It's very likely that with the information I learned, the videos I recorded of some of the talks, and the contacts made in that workshop we will be able to contribute to this fascinating area of Applied Mathematics soon.

Needless to say, I found the infrastructure and support from staff at BIRS superb. I'm glad to know that you are planning to extend your operations to more weeks a year. In my opinion, this kind of ventures are very good for the development of the Mathematical Sciences and should be supported.

265 Dirk Becherer, Department of Mathematics, Imperial College London, South Kensington Campus

I have visited the BIRS in summer 2004, and enjoyed an excellent workshop on mathematical finance. I do find such 'Oberwolfach Style' small workshop research stations extremely helpful, as they provide a young researcher with new contacts and the opportunity to get to know other people in their research field. For instance, I have met Tom Hurd who is working in my research area for the first time, and I did also discussed with Thaleia Zariphopoulou. The latter helped in preparing the ground for my 2weeks visit at her University in Austin, Texas. Furthermore I met further younger researchers whom I did not even knew about before, but who work in my interest areas (eg Simon Brendle from Princeton).

266 Karin Melnick, Department of Mathematics, University of Chicago

I attended the workshop on New Techniques in Lorentz Manifolds in November 2004. I am a fifth-year graduate student at the University of Chicago, and this was my first conference.

The workshop was great. The small size–there were about 25 participants–meant that, even as a graduate student, I was able to meet and talk with everyone. I made many good contacts, particularly with people from the Ecole Normale Superieure in Lyon, France, where I will be visiting next spring.

The setting was also very good for my first conference talk. Again, because of the small size, the atmosphere for talks was comfortable and informal, and everyone attended essentially all the talks.

It was an all-around fantastic experience to be at BIRS for five days. I appreciate having had the opportunity to go, and I hope that you will continue–and perhaps expand–your programs there.

267 Steve Giddings, Department of Physics, University of California-Santa Barbara

I have been a coorganizer both of BIRS' first workshop, in 2003, and of a workshop in 2004.

In my opinion BIRS supplies a fantastic format for collaborative discussion and research. In our first workshop we were a little uncertain how to optimally organize things, but in our second we feel we 'got it right' and had a very stimulating, interesting, dynamic, and fun workshop. We heard a number of very positive comments from our participants, and feel that it catalyzed important discussions and further research.

In particular, the BIRS configuration, where all the logistics are taken care of so people can focus on science, is really a great idea.

268 Walter Whiteley, Professor of Mathematics and Statistics, York University, Director of Applied Mathematics, Member of the Graduate Programs in Mathematics, in Computer Science, and in Education

In July 2004, I was a participant in, and an organizer for, an interdisciplinary BIRS workshop on Modeling Protein Flexibility and Motions. This workshop was an exceptional gathering of people from mathematics, computer science, biophysics and biochemistry, with diverse points of view on a set of shared problems. Both the support of this site, and the exceptional nature of the setting contributed in an essential way to our ability to gather a range of participants from world leading experts to graduate students. This was not a group that would have met under other circumstances, but the exchanges were so rich that we have strong hopes to meet again in a couple of years. The workshop also generated a web resource, at http://biophysics.asu.edu/banf/list.php, which continues to be a resource for researchers and students who are working in this area.

The workshop (and a 2 day extension at the University of Calgary), generated a number of promising unsolved problems, proposals for comparisons of theory and data, conjectures for specific work, and new collaborations. I am personally involved in two writing projects which will present new mathematical and modeling results which arose out of the exchanges around the workshop. There are work with some of my graduate and undergraduate research students here at York which is implicitly a response to queries and confusion which came up during the exchanges. I should say the exceptional wireless access throughout the workshop enabled significant sharing of resources, almost on demand, morning and evening, as the workshop proceeded.

To support our interdisciplinary work, and a number of other ongoing collaborations, I have a number of additional resources to call on. I am now much freer to propose projects for my graduate students, knowing that I can tap into the state of the art information to start them off in the right direction. These contacts are invaluable, and the overview developed from the workshop helps us all to sort out the significant questions from those which have been answered, or are known to be dead ends. Such an overview may be intangible, but it certainly is of primary significance in an area of rapid development and of new collaborations.

269 Claude LeBrun, Professor of Mathematics, SUNY Stony Brook

I attended last summer's workshop on conformal geometry, and thought it one of the most stimulating conferences I'd attended in recent years. The conference managed to bring together folks from quite different mathematical disciplines, and, as a consequence, people were proving new theorems, right-and-left. The venue was remarkably beautiful and stimulating, and I left feeling really invigorated — and with enough new material in my head to write several papers!

I sincerely hope that funding for the BIRS will be renewed. It is an institution of which Canadians should feel extremely proud.

270 Katie Pollard, Postdoctoral Researcher, Center for Biomolecular Science & Engineering, University of California-Santa Cruz

I participated in the BIRS workshop "Statistical Science for Genome Biology" in August, 2004. This week was a fabulous experience for me professionally. One year into my postdoc, it was an opportunity for me to get to know professors and students from several leading programs in my research area. These connections have led to my applying for two faculty positions that I might not have otherwise considered, one of which has already resulted in an interview! I also learned about a good, small conference in my research area that I hope to attend next year. In addition, a discussion at BIRS has sparked a new research collaboration. Finally, the week also provided me the opportunity to reconnect with several colleagues I already knew (from graduate school or other conferences) as well as meeting several people I knew only by name before BIRS. The setting in Banff, as you know, really encourages interaction beyond that of a typical conference.

This was my first experience at BIRS and I certainly hope to be back again in the future. In fact, I was so excited after the workshop in August, that I am a co-organizer on a new application for a workshop in 2006.

Thank you for a wonderful and unique professional gathering!

271 Marjorie Wonham, Centre for Mathematical Biology , University of Alberta

I am writing to express my appreciation of the two BIRS workshops I attended in 2003-2004 (Mathematical Biology: From Molecules to Ecosystems: The legacy of Lee Segel BIRS Workshop July 5-10, 2003 and 2-day Retreat on Mathematical Ecology and Evolution March 25 - March 27, 2004).

As a field biologist by training, I have come recently to mathematical biology as a postdoc, and have found collaborative events such as these workshops very influential in exposing me to new ideas and introducing me to new colleagues. At the Lee Segel workshop, I presented - with a certain amount of trepidation - my first modelling work, on West Nile virus. I was delighted by the constructive and helpful feedback, and it definitely improved our subsequent paper (Wonham et al. 2004 Proc. R. Soc. London B)

The second workshop was a student oriented event where we brainstormed new project ideas introduced by graduate students. I thought this was a terrific model for helping students develop their ideas with the focused attention of colleagues they might not otherwise encounter in their home institutions. Creativity, insight, and good humour abounded - it was inspiring and energizing.

In my admittedly limited experience, the BIRS atmosphere seems to be one of openness, collaboration, and collegiality - not to mention smooth logistics, excellent food, and great access to the mountains. The model developed for mathematical biology would extend naturally to other disciplines - my only reservation is that this might reduce my chances of returning for another math biology workshop!

Congratulations on making BIRS a super place. I'm looking forward to an opportunity to return.

272 Eckart Viehweg, University of Duisburg-Essen, Germany

In the development of mathematics in Germany the Institute in Oberwolfach played an important role. In a decentralized Country the existence of an international conference center has an extreme impact on the development of the research in the field. When I visited the Banff International Research Station one year ago, for the first and only time, for the conference on "Calabi-Yau Varieties and Mirror Symmetry" I realized, that this Institute tries to be some "Oberwolfach" for the Canadian mathematical community. No a copy, perhaps a more modern version (and the landscape is more impressive and the food is better).

Being able to participate in the workshop was extremely stimulating for my research. Coming from algebraic geometry, it was a unique possibility for me to meet differential geometers, and physicist working on mirror symmetry, and to put my own work on moduli of Calabi-Yau varieties in the framework of a more general picture. Necessarily this contact influenced the direction of my research afterwards, and at least two articles "in progress" have benefited from the workshop.

For me it was the first visit to Canada for mathematical reasons, (although I had a lot of contacts to

Canadian mathematicians before) and after the success of the workshop I am sure it will not be the last one.

273 Nobuo Hara, Mathematical Institute, Tohoku University

I am writing to reply to your request on support for BIRS. I have participated in BIRS workshop "Commutative Algebra: Homological and Birational Theory" held in the period of September 11-16, 2004. There I knew interesting new results and had nice discussions with some participants including L. Ein, M. Hochster, P. Monsky and V. Srinivas. Actually, I encountered the new notion of "p-fractal" in Paul Monsky's talk in the workshop, which enabled us to start a joint work that is now going on. Also, I could have a few-hour stimulating discussion with Lawrence Ein after a session. I hope that these experiences of mine give an evidence how excellent environment BIRS provides to mathematicians.

274 Simon Guest, Department of Engineering, University of Cambridge

I attended the workshop, 'Modeling Protein Flexibility and Motions' at the Banff International Research Station in July 2004. I am very happy to write in support of the work of BIRS, because I thought this was the best workshop that I have ever attended. Part of this is due to the workshop organisers, of course, who brought together a tremendously exciting cross-disciplinary group of academics. But in no small part it is due to the environment that BIRS provides. The arrangement of accommodation, social areas, lecture rooms, printing and computer support, catering, and the physical environment, all led to an ideal stage for academic discussion.

There is no doubt that BIRS is providing an exciting resource to the mathematical community, and the wider academic world. I have no doubt that, if BIRS is able to continue and flourish, there will in future years be many academic breakthroughs that trace their ancestry to a workshop at BIRS.

275 Robert Bridson, Department of Computer Science, University of British Columbia

I attended the Pacific Northwest Numerical Analysis Seminar at BIRS back in October, where I had a great opportunity to get back into numerical linear algebra—meeting my old advisor again, getting into talks on the subject. Chen Greif and I had been discussing an idea I had earlier about a generalization of Krylov methods, and the stimulating company along with simply being in a great environment for thinking (away from departmental distractions) helped us turn this into a paper we just submitted to SIMAX.

276 Paul Van Dooren, Centre for Systems Engineering and Applied Mechanics, Universite Catholique de Louvain, Belgium

I have participated only once in a workshop at the Banff International Research Center (Model Reduction Problems and Matrix Methods, April 3-8, 2004) but is was a fantastic meeting.

The organizers had chosen a timely topic and invited the experts in the area. It was a very stimulating conference in which all the talks were attended by almost all participants. The numerous discussions resulting from the presentations clearly showed that new ideas were emerging from the interactions at that meeting.

On top of that I'd like to mention also that the infrastructure is great. The rooms and conference rooms are very well equipped (computer access, printing facilities, audio-visual equipment were first quality) and the personnel was very helpful.

It was a memorable event.

277 Rodney Y. Sharp, Department of Pure Mathematics, University of Sheffield

A few weeks ago, I was fortunate to be an invited participant at a workshop at the Banff International Research Station for Mathematical Innovation and

Discovery (BIRS). I understand that BIRS is administered by the Pacific Institute for the Mathematical Sciences (PIMS), and I am writing to you, in your role as Director of PIMS, to express my appreciation of the facilities provided at BIRS.

The workshop which I attended provided excellent opportunities for serious mathematical discussions between individual participants, because there were adequate gaps between the scheduled talks. Indeed, I observed several pairs of participants in lengthy and detailed discussions about collaborative research. I myself benefited not only from discussions with other participants, and consolidation of important contacts, but also from several of the inspiring lectures given by experts present at the meeting.

I would also like to compliment the PIMS management on the practical arrangements provided for workshop participants at BIRS. In addition to the large lecture theatre, several smaller rooms were available for use by small groups (or even just by two people wishing to discuss their collaborative research); the living accommodation, with computer terminals in the bedrooms, was very good, and the informal breakfasts worked well; the lunches and dinners in the Banff Centre Dining Room were really excellent. In addition, the transport links, the surroundings, and the beautiful scenery in the neighbourhood, are even better than those at Oberwolfach. All in all, BIRS is an excellent facility for the international mathematical community.

If I am ever invited to another workshop at BIRS, I shall do my very best to attend!

278 Rene Boel, Ghent University, Belgium

I participated this year in the "Banff DES Workshop" on May13-15. This was an extremely interesting workshop thanks to the very clear focus on complexity of large DES systems control, and the possibilities of hierarchical and (most interesting to me) distributed approaches. The workshop provided the opportunity to discuss very intensely during a short time span of only 3 days these problems with a number of people I already knew very well beforehand (Lafortune, Ricker, Caines, Sreenivas), but it also led to discussions with researchers I got to know much better in Banff (Thistle, O'Young, Romanovsky, Mallon). We had very interesting discussions on one particular topic, decentralised observation and fault detection of large DES, that helped me and my Ph.D. student to refocus our work. Some of the discussions led to ideas on possible "test cases" or "benchmark problems" that we all try to solve, and this exchange of benchmark problems will certainly help in better understanding the relations between the different approaches we use to solve the same (or at least very similar) problems. I have discussed this work by e-mail, and at two later conferences (MTNS in July 2004, WODES in September 2004), with several of these people. We have not yet written down our common thinking in joint papers, nor have we managed to set up common research projects (the distance between Europe and Canada is still rather large I am afraid!), but certainly this Banff Workshop has brought us closer together. To me it has been for me a very enriching experience. It has influenced my research topics, and the work of one of my Ph.D. students, in particular by convincing me of the need to study concurrency problems in a model independent way (rather than the Petri net based approach I used in the past). As a European I certainly believe this has been a very worthwhile experience for the Canadian researchers, and I would hope that

279 Sean Sather-Wagstaff, University of Nebraska-Lincoln, USA

I had the privilege to participate in the workshop on "Commutative Algebra: Homological and Birational Theory" at the Banff International Research Station (BIRS), September 11-16, 2004. It was a fantastic experience. The facilities at BIRS are top-notch. Each sleeping room is clean and well-furnished and has its own workstation. The coffee room was nicely furnished and always well-stocked, though it would be great to have some white or black boards to work on. The lecture room was well-constructed, with good board space and computer hook-ups. And the dining facilities made our meals wonderful.

The atmosphere at BIRS is of the highest quality. The workshop, in my opinion, was the model for workshops. Not only were there many interesting talks, but there was ample time (and space) for participants to discuss mathematics outside the lectures. Personally, the conference brought me in contact with people I normally wouldn't meet, with one consequence being the proof of part of a conjecture I have been thinking about for some time now. Too often, conferences and workshops consist of talks with no time between for the participants to actually work, which defeats half the purpose of bringing researchers together. The people at BIRS should be applauded for getting it right. Housing and feeding everyone to-

gether made the workshop even more intimate and gave us even more time to work together. Much praise should be directed at the people who run the conference center, as the week came together seamlessly.

BIRS is a fantastic place, on par with the CIRM in Luminy. I very much hope to be able to participate in other workshops there in the future.

280 Patrick Speissegger, Department of Mathematics and Statistics, McMaster University

I profited from participating in the workshop "Interactions between model theory and geometry", which took place March 13 - 18, 2004, in two ways: first, I witnessed a conjecture of Anand Pillay's on a descending chain condition for groups definable in o-minimal structures being proved at the workshop; a paper summarizing the result has been submitted for publication by the four collaborators involved. Second, working together with Jean-Philippe Rolin, another participant at the workshop, we started a new project where we intend to study the expansion of the real field by certain classes of functions appearing in, and crucial to, Il'yashenko's proof of Dulac's Problem concerning limit cycles of planar analytic vector fields. To be free from the usual distractions of the home institution, as was the case during the workshop at BIRS, made it possible for us to come up, within just a few days, with a possible direction and some first rough ideas for this project.

281 David Kutasov, University of Chicago

I attended a workshop on string theory at BIRS in the winter of 2003. This was a very useful experience. I met many people I normally wouldn't, and got the idea for a paper that was published a few months after the workshop, as hep-th/0304045, Nucl. Phys. B666 (2003) 56-70. I hope the important work of BIRS will continue to be supported by the funding agencies.

282 Anatoliy Swishchuk, Mathematical and Computational Finance Laboratory, Department of Mathematics and Statistics, University of Calgary

I've recently participated in MITACS Project Meeting: Modelling Trading and Risk in the Market, November 11-13, 2004, BIRS, Banff, AB, Canada.

I've found BIRS as a very nice place to bring academic researchers in mathematical and computational finance together with risk managers and quantitative analysts from industry to share new ideas, practical and theoretical questions of the moment, current research, and to foster closer collaboration.

In this way, BIRS helped me to be familiar with new results in this area, to make new contacts I have not had early and originate my paper "Modelling and Pricing of Variance Swaps for Stochastic Volaitlities with Delay" during the workshop.

In this way, BIRS is a very useful instrument at the service of the scientific community, a place where research and discussions can be conducted under the best conditions, and I strongly express my support for BIRS.

283 Trung Van Nguyen, Department of Chemical and Petroleum Engineering , University of Kansas, 2002-2005 Madison & Lila Self Faculty Scholar, Graduate Advisor

I strongly support the service that the Banff International Research Station has been providing to the scientific communities. I had looked at the programs at the Banff IRS and was surprised and impressed at the programs organized and the level of services provided by this center.

My graduate student and I attended a workshop on Fuel Cell Computational Fluid Mechanics organized by PIMS at the Banff IRS in 2003 and have found it to be a very useful experience. For me

the workshop provided great contacts with colleagues working in the area, and for my student it provided a great exposure to what his peers were working on and the challenges of their research area and an opportunity to show and discuss his own his research activities and to establish contacts with his peers.

If I could be of further assistance, please feel free to contact me.

284 Chris Mertens, Math Department, Sundre High School

My experience at the Banff International Research Station was in one word, phenomenal. We were asked to present at a conference sponsored by PIMS in May of last year. Our topic was one that we are involved in regarding "Lesson Study" and "Math Fair" in a high school setting. We were warmly received and there was great interest for more information about our work. We made contacts with individuals who gave us ideas to improve on our project. If asked to attend another of these conferences, I would not hesitate to say yes!

285 Mike Baines, Professor of Applied Mathematics, The University of Reading, UK

Yes, I was a BIRS participant in the summer of 2003 (one of the PIMS workshops). I thought that BIRS was an excellent venue with a fine mixture of intensive study and cross-subject interaction in a stimulating atmosphere. I very much appreciated and benefited from the facilities and the high standard of the workshop. It gave me an opportunity to describe and develop new ideas and bounce them off some big names in my field of the analysis and numerical analysis of moving mesh methods. Without that experience I doubt whether I would have developed my recent work (and of papers) on scale invariant moving mesh finite element methods for partial differential equations, with their properties of following exact solutions so closely.

286 Gideon Maschler, Department of Mathematics, University of Toronto

I have participated in a workshop on May 2004 (Conformal Geometry), and am scheduled to attend another one on May 2005. Besides being quite pleasant, my assessment is that it was indeed very useful. The workshop coordinators did a very good job of inviting workers who have not all interacted with one another beforehand. I made many new contacts, and realized how work I have done is related to other work which I was not aware of. At least one topic in the workshop have since become an area of interest for me, and I am trying to produce new results in this subfield. I have subsequently read many papers that I may have not even considered reading, if it were not for the workshop. In short, the new mathematical relations, the intimate nature of the interaction, and the inspiring beautiful environment are benefits that I have not always experienced in other types of conferences and meetings. I strongly support the continuation and renewal of the BIRS.

287 Peter Loly, Professor, Physics & Astronomy, University of Manitoba

I returned to Banff this past September to attend the Theoretical Physics Institute (Alberta) Symposium, which included the Donald Betts tribute, many years after I used to attend NATO ASW's and Summer Schools at the Banff Centre.

The event was a reunion in part, and it served to make me aware of the recent changes due to the conception of BIRS, as well as PIMS. This is an admirable facility which I hope to visit again, perhaps as soon as the 2005 Renaissance meeting.

I have to follow up on some unexpected contacts flowing from the meeting.

The residence rooms were very comfortable, and, once I got through a long setup process, well-equipped with computer facilities.

It would have been of some interest to me if there had been some resident mathematicians with whom I might have discussed some of my work which might lead to proposing a future event related to magic squares.

I recommend the BIRS facility as a great place to bring specialist meetings.

288 Phill Holmes, Department of Mathematics, Princeton University

I attended the workshop on creative writing in and about mathematics, from 17 April to 22 April, 2004, at BIRS. It was one of the most interesting gatherings I've attended, with a wonderfully heterogerneous group of mathematicians, scientists, philosophers, playwrights, poets, novelists and writers. We did not discuss technical aspects of math, but went further into influences from, implications for, applications to, interactions with the larger world than is normally possible (or desirable). Since I am an applied mathematician and a poet (having published 4 collections), this was perfect for me.

The meeting was structured more like a writers' workshop than a math conference: each afternoon we went off to our rooms, or up the mountain, or to a coffee shop, and wrote or worked on something, which we brought to the following morning session's open discussion. Such composing/researching 'in the moment,' was a great experience for me, and got me moving on a recalcitrant poem. I also composed and more-or-less finished a poem which has just appeared, along with some earlier work, in the Mathematical Intelligencer (Vol 26, No 4, 2004). So, I didn't get a theorem out of it, but I did get 2 poems and motivation for several more!

PS. You should already have a note in your files that I wrote to Robert Moody about this workshop.

289 Daniel Lenz, Fakultt fr Mathematik, Technische Universitt Chemnitz

let me write to say how much I hope BIRS will continue its program.

I have had the opportunity to attend a workshop this spring. Both the relaxed atmosphere at BIRS and the excellent choice of participants have made this workshop a most stimulating and fruitful research experience. In fact, discussions at this meeting not only helped me with ongoing work but also initiated a new project, which I am currently working on.

290 Yvette Mandin-Kelly, Dovercourt Elementary School

I would like to share with you my experience while attending the Banff workshop in mathematical sciences and how it has benefited my students, my school, and colleagues. I am a regular classroom teacher who works with students who have had difficulty picking up on reading and learning math concepts in their first three years of formal schooling. With this comes the challenge for them to also show their understanding by speaking or writing their thoughts and ideas.

Math is something that for a lot of them is something they are just not good at. I have had a passion and commitment to being able to break down concepts and communicate effectively so that they are able to begin to understand concepts, recognize patterns and develop strategies and a positive outlook so they will embrace the challenges of doing math.

I am also very curious and interested on where do certain mathematical ideas start.

A consultant with our school district thought that the workshop would be right up my alley. Well with trepidation of being with 'mathematicians', off I set. I had a terrific time in the sessions, was able to bring the perspective of people who math doesn't necessarily come easily, to use a constructivisionist's approach and to learn, learn and learn with other division teachers, to be inspired by other passionate 'closet' mathematicians and to be able to talk to international math instructors.

It was an experience that I came away with more excitement, energy and fire to share with my students, my staff, colleagues in my "special needs" field and to lead some hands on workshops with colleagues.

I was also very impressed and appreciative of being able to benefit from BIRS.

291 Michael Coelli, PhD Candidate, University of British Columbia

I attended the BIRS workshop on estimation of peer effects in April of 2004. I had the great opportunity of meeting with many scholars in the field, both experienced and new. The workshop itself made me much more aware of the current trend in research in this area, and will shape how I approach my own current research on estimating peer effects. I have also gained from comments given to me by participants about other work I am undertaking that I had the

opportunity of discussing with these leaders in the field. The workshop was very influential in shaping my current and near future research.

292 Vyacheslav Zaharyuta, Sabanc universitesi, Turkey

I express my gratitude to BIRS for a great success of the conference in Complex Potential Theory. This conference was extremely important for me personally, because I had joint scientific interests with the majority of its participants and in was very useful to discuss with them old and new problems in this area. In some extent such discussions even more useful than talks themselves. It was a great idea of the organizers to invite some specialists from adjacent areas (especially, Rumely, Saff and Totik). For example, it was a great pleasure and surprise for me, that my results of 70ths about the multidimensional transfinite diameters and Chebyshev constants has been used efficiently in the very impressive recent results on Algebraic Geometry (by R. Rumely, C.F. Lau and R. Varley). I hope that it would be another possibility to organize a conference in Complex Potential Theory (maybe jointly with some closely related directions).

293 Anne E Henke, Department of Mathematics and Computer Science, University of Leicester

This is to say that I participated at a Banff-workshop last autumn (October 2003). It was a high quality workshop and I was very happy that I got the opportunity to participate. As I come from Europe, the opportunity to present my work to an American/Canadian audience, was vital to form new contacts. In particular in Banff I got into contact with G.Cliff from Canada. As a result, an exchange with a former student of Cliff and myself is planned for next year. I am very grateful for the opportunities and stimulating environment Banff offered me.

294 Carlo R. Laing, IIMS, Massey University, New Zealand

I attended the workshop on Symmetry and Bifurcation in Biology at BIRS in 2003. It was an opportunity to present my work to very interested audience, something that does not often happen at conferences with much broader audiences. I gained a lot from the meeting, and enjoyed the opportunity to spend time with other people working in my field. I particularly benefited from the "spare time" between sessions, which I used to talk in more detail with several of the participants about their work and its relationship to mine.

I think BIRS is a wonderful establishment and consider myself very lucky to have spent some time there. I fully support the continuation of BIRS.

295 Donna Calhoun, Department of Applied Mathematics, University of Washington

I have been to two BIRS conferences - Moving and Free Interface Problems, (organized by Randall LeVeque and Bob Russell, Aug. 2003), and the Pacific Northwest Numerical Analysis Seminar (PNWAS, organized by Chen Greif, Sept 2004). My experience at both workshops was nothing but positive. The setting is beautiful and provides the perfect informal environment for collaborative research.

At the Moving Interfaces workshop, I had a lengthy discussion with Peter Smereka about the Immersed Interface Method, and how it can really be viewed as a way to discretize a delta function for the types of numerical computations that arise in moving and free boundary problems. He hadn't see that connection before, and became quite intrigued with the idea. Last spring, he sent me a pre-print of a paper expanding on these ideas and plans to submit it shortly.

Last September, I was invited to speak at the annual PNWAS meeting. I have been attending those meetings for about 10 years now, and so was happy to accept the invitation. The fact that it was in Banff only made it that much more appealing. That meeting provided me with the perfect opportunity to talk for the first time on some research I had been working on on my own, but hadn't really discussed in detail with anyone else. I had confidence in the ideas, but

the preparations for talk really forced me to clarify those ideas, and put together some computational results that validated the research. I received very positive feedback on the talk and research I had done, and so left Banff confident that I should write up the research and submit it.

I strongly support the continued funding for BIRS, and only hope that more people are able to take advantage of the research possibilities there.

296 Boris Solomyak, Professor, Department of Mathematics, University of Washington

I was a co-organizer of 2 BIRS workshops: Joint Dynamics, in June-July 2003, with Doug Lind, Dan Rudolph, and Klaus Schmidt, and Aperiodic Order: Dynamical Systems, Combinatorics, and Operators, in May-June 2004, with Michael Baake, David Damanik, and Ian Putnam.

I found both workshops to be extremely stimulating. Here is one concrete example: Robbie Robinson raised a question about the existence of a topologically mixing tiling dynamical system in his talk at the Joint Dynamics workshop. Together with Rick Kenyon, also a participant, we started to think about it (in fact, we had some partial results in this direction as far back as mid 1990-s, which we hadn't written down, and this question motivated us to take another look at the problem). We made some progress, and later Lorenzo Sadun, who was also a participant in both workshops, joined in this project. The question about higher-dimensional tiling systems is still open, but we obtained a nice characterization of topologically mixing substitution systems in the two-symbol case. A paper by Kenyon, Sadun, and myself has been submitted. This is just one example of a fruitful collaboration which was directly inspired by the workshop; I am sure there are more.

297 David Rosenthal, St. John's University

I attended a workshop at BIRS this past April and had a wonderful time. Everyone there came away feeling that the conference was both productive and fun. The facilities were fantastic and we couldn't ask for a much better atmosphere. I hope that I have the chance to attend future meetings there.

298 Laurel Fais, Research Associate, Infant Studies Centre, University of British Columbia

I participated in the workshop on "Human Infant Speech Perception and Language Acquisition" held from March 18 to 20, 2004 at the Banff International Research Station. Actually, not only did I participate in it as a researcher involved in the project that was the topic of the meeting, but in my role as Dr. Janet Werker's Lab Coordinator, I also worked with the BIRS staff who set up the workshop for us.

Our workshop brought together primary researchers and their students, all of whom were collaborating on a wide-ranging project, from countries all over Europe and North America. Being together at BIRS allowed us to transcend the usual boundaries that had made working together at best a ponderous project: boundaries of distance, time zones, email servers, incompatible file forms and the like. We could pursue our discussions in in-depth brainstorming sessions, lecture-format talks, over a formal dinner, with coffee or wine in the lounge, in short, in any of a wide variety of venues that encouraged the unfettered interaction critically required to make a true collaboration work. And true collaboration did grow out of our workshop. Connections were made especially among students and new researchers to the project for whom face-to-face discussion was a necessary prerequisite of continued work together by email.

I would also like to comment at least briefly on the organizational aspects of the workshop. Certainly I found that the structure for setting up the workshop, inviting participants, receiving confirmations, arranging for accommodations and the like, was well-thought-out and workable. But what I appreciated the most was that once I arrived in Banff, it was no longer necessary for me to be an organizer. I could take up my role as researcher and participate fully in the talks and discussions without concern for any of the logistics of the conference. This lack of distraction made it possible for me-for all of us-to be fully participating members of what turned out to be a very productive workshop.

I heartily endorse the significant role that BIRS plays in the scientific community. My participation in the workshop there made an enormous contribution to my ability to integrate my understanding of all the various areas on which our different research teams were working and thus on my ability to rep-

resent this work accurately and effectively in the research I am doing that has grown out of that meeting.

299 James McCoy, Centre for Mathematics and its Applications, Australian National University

I would like to thank you for providing a valuable service to the mathematical community. BIRS has made a difference to my research, allowing me to meet with many internationally renowned mathematicians in my area of research, people I would not otherwise have had the chance to meet. Discussions at BIRS and attendance at the talks have opened up new directions in my research and for that I am very grateful. I was also made aware of very relevant cutting edge research which has not yet appeared in print.

The facilities at BIRS were certainly of excellent standard and I have no hesitation in highly recommending it as a venue for mathematical conferences.

300 Peter Webb, Department of Mathematics, University of Minnesota

The workshop on representations of algebras which I attended at Banff was particularly useful to me in that I was able to meet with an international group of experts and achieve things by face-to-face contact which would not have been possible otherwise. I went to Banff with several questions which I resolved while I was there. In one case it was a question of determining whether a certain construction is already in the literature and known to the mathematical community. In another case I was able to discuss the degree of overlap between some work of mine and work of another workshop participant. In a third case I was able to meet someone whose work I had been studying and who I could not remember meeting before (although he reminded me that we had met about 10 years ago).

These interactions have the greatest benefit to my research, and BIRS is playing a significant role in allowing them to take place.

301 Jingyi Chen, Department of Mathematics, University of British Columbia

I have participated the workshop "Perspectives in Differential Geometry" in 2003 and the workshop "Geometric Evolution Equations" in 2004. I enjoyed both of them very much. The results reported in the workshops were most updated and some were ongoing research projects. The opportunities to talk to a group of experts were highly valuable, and definitely have positive impacts in my research. From what I learn, all of the attendees of the two workshops want to come back to BIRS.

302 Lyn Thomas, University of Southampton

As one of the organisers of the Consumer Credit Risk conference held in BIRS in October 2003 can I thank you for the invitation and the work you and our staff did. This is an area which has a limited academic research community spread over five continents but is of vital importance to the functioning of the economy (Without it there would be no mass consumer credit industry). The opportunity for the researchers to get together and concentrate on the current research problems and to agree an agenda of future research was very useful in two ways. Firstly the opportunity to work closely in small groups helped develop research collaborations that would never otherwise have happened. Secondly the meeting of minds on the relative importance of unsolved research areas has given a cohesion to the community that was not previously there. All the participants I have been corresponding with subsequently agreed on how useful the conference was and the excellence of the venue for this type of interaction. In my own case the conference directly led to a paper with David Hand and Bob Oliver mapping out the future of research in this area, and the collaboration with Fabio Wendling form Brazil begun at Banff led to a grant for him to come to the UK to work together and we have produced papers on the credit risk of portfolios of retail loans which is both the first such model specifically for retail portfolios and also impinges considerably on the proposed regulations in the Basel New accord for capital adequacy, which is the major event affecting banking in the next five years.

303 Raf Cluckers, Postdoctoral fellow of F.W.O.-Flanders at Ecole Normale Suprieure, Paris

My stay at BIRS has been very important and successful to:

1) broaden my contact basis with people working in model theory and real geometry;

2) present my most recent results to a specialist audience;

3) work further with coauthors on joint projects , towards publication of a research paper;

4) learn about recent progress in model theory and real geometry.

304 Toms Caraballo, Professor of Mathematical Analysis, Facultad de Matematicas, Universidad de Sevilla, Spain

Indeed, I participated in a Research in Team during August 2003 for two weeks, and I am glad to say that it was an excellent experience. I had a wonderful stay, and I had the opportunity of meeting three other colleagues to work in a common project during these two weeks. We could discuss on several problems and we prepared successfully the basis for at least three papers on the field of Invariant Manifolds for Stochastic Partial Differential Equations which are still in progress due to the difficulties of the topic. Without this stay in BIRS it would have been almost impossible to obtain such results. This is why I strongly support this institution and am very grateful to them.

305 Alexander Markus, Ben-Gurion University of the Negev, Israel

I have read with great satisfaction your information on the plans of the expanding of the activity of the Banff International Research Station.

I have participated in the Workshop on Linear Operators at BIRS in August 2004. The beautiful location in a national park, the computer connection in hotel room, the possibility of direct and non-formal contacts with eminent researches in my area, all of this made these three unforgettable days in the Banff Centre very nice and very useful for me.

I hope I will have additional possibilities to visit BIRS. This hope is connected, in particular, with the plans to organize at BIRS a Workshop on Numerical Ranges in 2006.

I wish you new achievements in your important activity.

306 Janet Werker, FRSC, Professor and Canada Research, Chair, UBC Psychology, University of British Columbia

I welcome the opportunity to express just how positive my experience was of hosting a workshop at the Banff International Research Station this past March (2004). I am a Developmental Psychologist, interested in the effects of experience on speech perception, so you might wonder why I hosted a workshop at BIRS. In the past several years, however, it has become increasing apparent that one way in which infants develop language specific perceptual categories is via statistical learning - their minds are designed to carefully track probabilistic statistics in heard speech, allowing the tuning and retuning of native perceptual categories. This finding has reignited basic theoretical controversies in language development - do infants track just any statistical regularities they encounter, or are there tights constraints on just what can be learned, given by an innately given language acquisition device? In the first case, statistical learning is a matter of "induction", and in the latter case statistical learning is a matter of "selection" among already given alternative. To find a way through this morass, psychologists and cognitive scientists have turned to computational modelling - in some cases modelling the characteristics of the input, sometimes of the neural architecture supporting learning, and sometimes of both. At the BIRS workshop, we brought together psychologists, cognitive scientists, linguists, computer scientists, and engineers to discuss these issues. The quality of the discussions, and the insights provided, led to significant advances and insights both in the experiments that were designed, and in the characteristics of the computational models being developed. One focus that emerged was a need to differentiate between what we call "shallow" learning (perceptual retuning, likely via statistical learning) from "deep" learning (instantiation of

learned regularities in actual language processing). This has already led to a number of new experiments, and is the thrust of a theoretical paper several of us are now working on.

The support provided by BIRS was invaluable to the success of the workshop. In a completely non-intrusive way, an environment was created by the BIRS staff and the BIRS facility that allowed us to concentrate purely on our work. Even as the conference organizer, I was able to assume that the rooms would be set up, the food available, projectors in place, etc., and enjoy the intellectual content of the meeting. The absolutely stunning setting is, I firmly believe, also conducive to creativity and productive intellectual exchanges. Attendees at the workshop were from Canada, the U.S. Spain, Italy, and France. All were impressed by the concept of BIRS, the facility itself, the incredibly helpful staff, and the success of the meeting. This is a gem that should be maintained.

307 Maria J. Gonzalez, University of Cadiz, Spain

My name is Maria J. Gonzalez. I am extremely grateful to the

Banff International Research Station for organizing the workshop on "Analysis and Geometric Measure Theory" in July 2003.It was an honour and a pleasure to participate in it. The

atmosphere is very appropriate to encourage discussions with the the other participants. In particular,my meeting there with J. Garnett, G. David and H. Pajot has been very helpful. Thanks to their valuable comments and explanations I have been able to better understand some topics that I have used later on in my research.

The experience was excellent and I hope it can be repeated.

Thank you.

308 Serge Dubuc, Department de Mathematiques et de statistique, Universit de Montreal

I have participated in the workshop "Applicable Harmonic Analysis" in June 2003. This meeting was an opportunity to meet Prof. Bin Han of University of Alberta. At this meeting, we planned a paper which has been completed in Fall 2003 and submitted to CAGD (Computer Aided Geometric Design) in January 2004.

309 Mark Lewis, Canada Research Chair in Mathematical Biology, University of Alberta

this is a letter of strong support and appreciation for the impact that BIRS has had on mathematics in the PIMS and broader communities. From my experience it has built and strengthened interactions between researchers in new tangible ways, and this is having a major impact on research activities.

Rather than focusing on the broad impact of the workshops, FRGs and so forth, I would prefer to focus in on two examples of "spin off" research activities that have benefited Alberta.

The first is a new collaboration with Ed McCauley (CRC in Population Ecology at Calgary). A new Alberta Ingenuity Fund Centre that McCauley codirects http://www.albertaingenuity.ca/grants evaluates water as an Alberta resource that is facing progressively greater challenges from human demands. We are now undertaking a mathematical collaboration with McCauley in the context of this large network (total annual budget approx 1.5 million). Our goal is to mathematically model the impact of stream dynamics (flow rates, nutrient levels etc.) on ecology of natural stream populations. A student/postdoc problem solving meeting at BIRS in March 04 was instrumental in getting this project off the ground, where we laid the groundwork for a long-standing collaborative thrust that involves U of Alberta and U of Calgary. We currently have a (PIMS supported) postdoc (joint with McCauley) working on the project, and have applied for additional network money for this (results pending).

More recently, we just completed a meeting on "Biological Invasions" at BIRS (Nov 04). One species whose range is spreading into Alberta (from US and BC) is the mountain pine beetle (MPB). This devastates pine forests. In collaboration with Fangliang He (University of Alberta CRC in Biodiversity and Landscape Modeling) there is a new Alberta-based project to use mathematical models to evaluate and predict impacts of MPB. This project, recently funded by Natural Resources Canada (approx $ 500 K), is just starting (less than one month old). The recent "Biological Invasions" meeting at BIRS brought a US expert (Jim Powell, USU) on mathematical modelling of MPB to lecture on his work over the last decade.

This lecture, and subsequent afternoon discussions with Powell where we could "test out" our modelling ideas on him, provided invaluable scientific input at the point where we are just starting this new research project. It caused us to rethink some of our approaches, and has shown us new methods we can use to improve improve the quality of the research.

310 Dale Olesky, Professor, Department of Computer Science, University of Victoria

I wish to express my support for the continued funding of the Banff International Research Station. I attended a workshop there in May 2004, and it was a very stimulating research environment. It brought together researchers with common interests from across North America and more distant parts of the globe for the presentation of talks and less formal focussed discussions. While I was familiar with many of these researchers and their work, I met many new people and learned about their research ideas. Such workshops are in many ways more fruitful than conferences due to the relatively small number of attendees and the focussed nature of a workshop. One direct benefit of the workshop I attended was making contact with a graduate student from Wyoming, who very likely will work with me as a postdoctoral fellow in a few months when he completes his PhD. These workshops facilitate such interactions with current graduate students as well as established researchers.

I would like to compare the Banff International Research Station with the well established and successful Oberwolfach facility in Germany. I have attended workshops at both, and I am happy to say that the Banff International Research Station compares very favorably with the prestigious Oberwolfach site, and is a credit to the North American mathematical communities that support it. I hope that we have the vision and funding to see this continue.

311 Brian O. Ma, M.Sc., Behavioural Ecology Research Group, Department of Biological Sciences, Simon Fraser University

I attended the MITACS-MSRI-PIMS Special Program on Infectious Diseases at BIRS, Banff, Alberta from June 19th to July 2, 2004. This workshop was a very rewarding experience for me. I was able connections with professors and other peers, which is always a valuable commodity. However, what was most interesting to me was the various techniques and viewpoints that came out of meeting. With speakers ranging from fellow graduate students, professors, and government scientists, the different viewpoints and aspects of infectious disease research were presented to me in a cohesive and comprehensive fashion. Many of the students that attending this workshop were from different disciplines, so each of us brought a very different skill set to the table. By working on group projects together, we were able to blend our skill sets together.

Some of the techniques that were presented in the workshop were also quite amazing, and helped me directly with my research. Specifically, we were shown four different ways of developing the basic reproductive ratio, which was something I had struggled with in my own research. Now, I have four different ways of doing it!

As a whole, the workshop provided a fun and informative experience, and I would not hesitate to attend another workshop like this in the future.

312 Ted Bisztriczky, Head, Department of Mathematics and Statistics, University of Calgary

It is my pleasure to able to express my support for the renewal of the Banff International Research Station. As Head of the Department of Mathematics and Statistics at the University of Calgary,I can authoritatively state that BIRS has helped tremendously to increase research activity in the mathematical sciences at this University.The proximity of Banff to Calgary has enabled us not only to frequently par-

ticipate at workshops(especially the 2-day ones) but also to take advantage of the presence of the many visiting high calibre scientists via both a BIRS Visitor Program and the occasional extensions of the workshops by an added day or two of meetings in Calgary.

As a mathematician with many international collaborators,I can also state that BIRS is viewed very favourably and appreciatively by researchers in the mathematical sciences all over the world.With the establishment of BIRS,Canada is now regarded as one of the leading countries for mathematics based research.

313 Helmy S. Sherif, Professor Emeritus, Department of Physics, University of Alberta

It gives me great pleasure to send you this brief note in support of the renewal of funding for the Banff International Research Station. I have been involved in two weekend workshops held at BIRS, one in August 2003 and the second this past September. These workshops involved colleagues from the Universities of Alberta, Calgary and Lethbridge together with a number of participants from national and international institutions.

These workshops have been most helpful in bringing people from different disciplines (physics, mathematics, chemistry and computing science) together to discuss topics of research of mutual interest. I am happy to say that interdisciplinary collaborations have been enhanced due to these workshops. One evident result of these workshop is a noticeable increase in activities involving colleagues from the university of Calgary and University of Alberta, and collaboration between researchers in different department at the university of Alberta (I am sure you will learn about this from the individuals involved).

One of the common themes at these workshops was the variety of discussions involving many-body problems in various areas of physics and chemistry. In my particular case my interest is in the area of the nuclear many-body problems as it pertains to the study of nuclear structure and reactions with particular emphasis on applications to astrophysics. During these workshops I had the opportunity to discuss the work of colleagues in the United States who are involved in novel approaches to this problems. We are currently discussing the idea of holding one of the 5-day workshops at BIRS to bring together an international group of astrophysicists to forge mutual collaborations in this field. This will be a very timely course of action in view of the new astrophysics program carried out at the ISAC facility at TRIUMF.

I would like to close by expressing my gratitude to BIRS for making these encounters possible.

314 Jeong-Yup Lee, Department of Mathematical Sciences, University of Alberta

I am happy to write my experience here:

My experience has been great attending BIRS conferences or visiting BIRS for "Research in Team". I could meet many mathematicians in different areas whose work I often meet in my research. In 2004 "Aperiodic Order, Dynamical Systems, Combinatorics, and Operators" conference, I met a group of people whose research area is a lot related with my research project. I had a question which had been in my mind for a long time. So I asked this question to one of people in that group and she could tell me the answer right away giving me a good connection to other subjects with my project.

In 2003, I had a visit to BIRS for "Research in Team". This year we have submitted a paper of which work was initiated at that visit.

315 Dong-Ho Tsai, Department of Mathematics, National Tsing Hua University, Taiwan

I attended a workshop "Geometric Evolution Equations" held at BIRS from July 24, 2004 to July 29, 2004. This workshop is essentially the best one I have ever attended. I benefited a lot from this workshop by knowing some young researchers. I now have research collaboration with one of the young participant. This is very important to me. I think BIRS should continue its function as a research station. The facility is great also.

316 Thomas Meyer, School of Computer Science and Engineering, University of New South Wales, Australia

The workshop that I attended at BIRS brought together researchers from belief revision, constraint programming, and combinatorial optimisation, with the hope of establishing common ground between the disciplines.

As a consequence, a PhD student another BIRS workshop participant, and I are currently exploring the links between belief revision and constraint programming. We expect to publish results in the next year. Also, two of the participants at the workshop have since joined the research group I am a member of. It would thus be fair to say that the workshop has had a significant effect on the direction of my research.

317 Balint Virag, Canada Research Chair, University of Toronto

I find the BIRS the single most inspiring place to have a workshop, and my two stays there have been very productive. I have already accepted two invitations to future workshops.

Our paper "Zeros of the iid Gaussian power series: a conformally invariant determinantal process" (with Y. Peres) to appear in Acta Math, has seen important progress in the summer 2003 Discrete Probability meeting in Banff. We specifically thank BIRS for this in the acknowledgements. Let me take this opportunity to thank this wonderful institution again.

318 Serge Bouc, Institut de Mathematiques, CNRS-Universite Paris 7-Denis Diderot

I participated last year to the BIRS workshop "New trends in representations of finite groups". I had the opportunity to expose my work on the Dade group of a finite group, whose structure was still unknown in general at that time. It has been indeed an open problem for more than 25 years, after original Dade's work in 1978. During my talk, I formulated two conjectures on this subject. The audience's reaction was quite motivating, and in particular Jon Alperin encouraged me to continue my efforts in proving these conjectures. It required (only?) another six months to be done, and I finally proved my two conjectures in June. It's always difficult to measure exactly the impact of contacts one may have in such conferences, but I am sure that this BIRS workshop was an essential step in my work, in that it gave me the suitable framework to at least see my future research direction, and what kind of problems had to be solved to reach my goal. For these reasons, I sincerely hope to have other similar opportunities in the future.

319 Hendrik Lenstra, Mathematisch Instituut, Universiteit Leiden

This message is to express my support for BIRS. I was involved as a co-organizer in a BIRS workshop on number theory that was held in November, 2004. The workshop was roughly modeled on a series of workshops that is regularly being held in Oberwolfach, Germany. The formula of the workshop is to bring together number theorists who are active in several different areas and who share an attitude that has come to be referred to as 'explicit'; this includes, but is by no means limited to, computational work, In Oberwolfach, the formula works out quite successfully, and since mathematicians from North-America have fewer opportunities to come to Oberwolfach than their colleagues from Europe, it was felt appropriate to have them share in the success by organizing a similar meeting at Banff. Now that the meeting is over, it is interesting to see the differences with Oberwolfach. The obvious and expected one was the composition of the group brought together. It was again true that they belonged to several different pars of number theory, and there were many people not commonly seen together at meetings. Less expectedly, the fields represented were not the same as those typically represented at Oberwolfach, which is provided opportunities for unexpected interactions. Several participants mentioned to me that they had made profited from these opportunities and had made new and productive contacts at Banff. I hope that it will be possible to organize similar but different meetings at Banff in the future—similar in the sense that the formula is the same, but different in the sense that the list of invitees and the precise areas covered will be reconsidered.

It may be of interest to list a few other differences with Oberwolfach. In Oberwolfach, we often organize one of more mini-series of (say) three lectures on important new developments. This may also work at Banff, though the limit of 40 participants may be subcritical. In Oberwolfach, organizers are asked to keep the early afternoon free of lectures, so that there are more opportunities for interaction. This idea would be worth considering for Banff too. The facilities at Banff are excellent, except for the lecture room (which is a bit cramped) and, naturally, the library. The management is efficient and less heavy than at Oberwolfach. In summary, BIRS should be cherished and deserves a long life, all for the benefit of mathematics. I do wish you all success with renewing your grant.

320 Bill Jackson, School of Mathematical Sciences, Queen Mary, University of London

I attended the Banff Workshop on the Flexibility of Protein Molecules in July this year. I can honestly say it was one of the most stimulating meetings I have been to in my 25+ years as an academic. Certainly I have never been to a meeting which provoked such heated discussions. Attending the workshop motivated me to concentrate my research efforts into attacking the Tay-Whitely Conjecture on the rigidity of molecular frameworks. (Whitely was one of the workshop organisers and Tay attended the workshop.) I am taking leave of absence from my university from January to April 2005 in order to visit T Jordan (another participant at the workshop). Our aim is to work on the above mentioned conjecture and also on the more general problem of determining when a framework is rigid in 3D.

Another spin off from the workshop is a paper I am currently writing in collaboration with Brigitte and Herman Servitious which investigates the global rigidity of certain families of graphs in 2D. This joint research was instigated during the workshop. We intend to submit our paper for publication in the near future.

321 Justin Sawon, Department of Mathematics, SUNY at Stony Brook

I participated in the November 2003 workshop "Interaction of Gromov-Witten and finite-type invariants", and have recently finished a survey article entitled "Perturbative expansion of Chern-Simons theory" for the workshop proceedings. The highlight of the workshop for me were the lectures by Marcos Marino: it was great that we could invite a physicist to give a series of lectures about a very interesting, though mathematically underdeveloped topic.

322 James Wadsley, McMaster University

The BIRS facility was a superb place for a scientific meeting. The accommodation and other facilities for recreation, dining and other services were all excellent, and significantly more pleasant than what would typically be available at a regular hotel.

The scientific facilities including meeting rooms, talk presentation equipment and internet were all fantastic. It was very easy to use with no bottle necks or problems. Unlike most conferences, we were easily able to remotely look at work, reference material and even simulation results during the conference via internet. This is a rare and valuable capability. The set-up was very conducive to a good workshop. The site (with its beautiful views) and facilities attracted good people from as far away as Europe and made our meeting a great success.

323 Paul Tod, Mathematical Institute, Oxford University

I am writing in reply to your request for feedback on my experience as one of the participants at a workshop, specifically 04w5006 Conformal Geometry, this summer.

I had a very constructive time at the workshop. Conversations with Michael Eastwood and Rod Gover gave significant help in two directions with the problem of conformal gauge symmetries described in my talk. This is work I am actively engaged in with a student. Conversations with Claude LeBrun and Gideon Maschler cast light on a problem in the study of Einstein manifolds with torus symmetry which I

was involved in with another student, but persuaded me that it wasn't going to work! I also had useful interactions with Robin Graham, Lionel Mason, George Sparling and Maciek Dunajski.

The style of life and organisation and layout of the Centre all contribute to making it a good place to work. The administration is helpful, flexible and good-humoured. The Centre is well-run and a definite asset to the mathematical community. I wish it a long life.

324 Ron Graham, University of California-San Diego

I'm sorry I wasn't able to attend the recent PIMS Board meeting in Vancouver. I actually arrived in Vancouver the day before, but a serious cold (and laryngitis) struck, so I thought I would spare exposing the other committees to any of the accompanying viruses! We also overlapped for a day at BIRS last week but I missed bumping into you there as well!

It is clear that BIRS has been (and is continuing to be) a very positive force in the world on mathematics. I'm sure this will put a lot of pressure on Oberwolfach!

325 Karin Erdmann, Mathematical Institute, University of Oxford

During the meeting (Interactions of finite-dimensional algebras...) highlights for me were the lectures by Ginzburg (for general background), and the work by Schroer/Leclerc (related to Calabi-Yau dimension for self-injective algebras). Apart from this, discussions during the meeting helped me to finish a paper (which has now been submitted and provisionally accepted).

Meetings of this kind are extremely important and I hope very much that BIRS will continue

326 John Steel, Department of Mathematics, University of California-Berkeley

I attended the set theory workshop in early May 2004, organized by Matt Foreman. It was an excellent meeting; I met some younger people I hadn't met before, learned parts of some work by Hugh Woodin which I am trying to build on now, and even proved a little theorem during the conference. The beautiful setting, and the quiet, relaxed atmosphere at BIRS contributed a lot to this success. The staff was very friendly and helpful, and their efficiency made it easier to focus exclusively on mathematics.

It's a great place to have a math conference – I'd love to return!

327 Hans Weinberger, Department of Mathematics, University of Minnesota

I attended the workshop on Mathematical Models for Biological Invasions from November 27 to December 3, 2004. While it is clearly too soon to discuss its long-term effect on my work, I found it an excellent occasion to make the acquaintance of a number of bright ecologists. It was very useful to learn what methods they use to acquire and treat their data, and to hear what they would like to know. In addition, I was able to discuss some mathematical problems with other mathematicians with similar interests, including some young people whom I had not met before. I got a number of ideas for future work, which I hope to pursue shortly.

I should mention that BIRS is an ideal setting for such a conference. I found the close contact with a small group of people and a schedule which left much time for informal discussion to be extremely useful. There was plenty of space for working with small groups, and the meals were not only delicious, but provided a good setting for getting to know people.

328 Anant Godbole, Department of Mathematics, East Tennessee State University

The BIRS workshop on DeBruijn Cycles and Gray Codes was timely, appropriate and high-level. It was immensely useful for me in seeing the broader context of the research that I was doing. The local organization was far better than that at other Math Institutes and a special note needs to be made of Andrea Lundquist's quiet efficiency. The Oberwolfach setting was again better than at other Math Institutes that I

have been to. Renewal of funding for BIRS is, to my mind, a no-brainer, given the topics of the workshops and the extremely high standards that have been set from the very beginning.

329 Andrei Mikhailov, California Institute of Technology

I participated in the String Field theory camp, organized by Gordon Semenoff and Mark Van Raamsdonk. I was very much impressed by the center, the fabulous location and excellent conditions for work. At that time I was thinking about some aspects of the classical string dynamics in AdS space. The results of that work were reported in my paper hep-th/0409040 (I expressed my gratitude to the organizers in the Acknowledgement section of that paper).

Thanks a lot for the excellent time I spent at BIRS!

330 Lawrence Ein, University of Illinois at Chicago

I was a participant of a workshop on commutative algebra and singularities theory at the Banff International Research Station this Fall. I enjoy very much the workshop. It provides me, a complex algebraic geometer, a very nice opportunity to meet some of top commutative algebraists in the world. In particular I found the discussions with some of the Japanese colleagues working on tight closure theory are particularly useful for me. The similarity between the results obtained using analytic methods and pure algebraic methods using Frobenius morphisms is just simply fascinating. I appreciate very much the opportunities provided by the workshop at BIRS to interact with these colleagues.

331 Stefan Friedl, Rice University

I stayed at BIRS for a 5-day workshop with the title "Knots and their manifold stories". This stay turned out to be very productive, not only did I get introduced to a number of new research areas but it also started a collaboration with a Korean knot theorist which would not have started otherwise. I hope that BIRS will be funded in the future, it is of major importance to the mathematical community.

332 Craig A. Tracy, Department of Mathematics, University of California-Davis

I found my stay at BIRS most beneficial. It was the first "all combinatorics" meeting I have ever attended and it broadened my perspective. It also allowed me to meet many people who previously I had just known from their research. All and all a very pleasant stay.

333 Kenichiro Kimura, Institute of Mathematics, University of Tsukuba

I participated in the workshop

"Calabi-Yau varieties and Mirror symmetry", December 2003.

Before this I had never been in contact with physicists and had never been given motivation of research from them. In this workshop I could learn what kind of problems are discussed and studied at the front of this fascinating field and it was extremely useful.

334 Alan Hopenwasser, Department of Mathematics, University of Alabama

I respond with pleasure to your request for information about my Banff International Research Station experience in December 2003. The one word answer is: superb!

The facilities at BIRS are excellent, with first rate amenities. Everything about the workshop was conducive to maximizing the mathematical benefits of the meeting. I much prefer workshops of the size held at BIRS to larger meetings, primarily because, as at BIRS last year, they facilitate substantial contact with other specialists in my area (operator algebras).

In the specific instance of the workshop which I attended, about half the lectures touched on one relatively new topic (quiver algebras and free semigroup algebras). This afforded me the opportunity to get a good idea about the current research in this area. In principle, I could do the same by reading all the preprints in the area at home – but this would never

happen due to other demands on time. The BIRS workshops provide a much more efficient way to keep up with current research.

At the time of the workshop I was in the midst of preparing a paper ("Subalgebras of C*-algebras") with two coauthors, both of whom work at locations distant from my home university. One of the coauthors also attended the workshop; the relaxed pace of the workshop gave us ample opportunity to make significant progress in the preparation of the paper.

To summarize: the workshop which I attended at the Banff International Research Station was amongst the best I have ever attended. I certainly hope that I will visit BIRS again in the near future.

335 Maria Del Mar Gonzalez, Department of Mathematics, Princeton University

I participated in the BIRS workshop: Monge-Ampere type equations and applications, in August 2003. I was then a graduate student. This workshop in Banff had a great influence in my mathematical life since I gave there my first seminar. I had the opportunity to speak to a wide audience, interested in areas a little bit different than mine, but still related and with a lot of ideas to share.

I had some interesting conversations with prof. Guan and prof. Wang, whose work is related to my paper 'Singular sets of a class of locally conformally flat manifolds', to appear in Duke Journals.

I also met Prof. Martinez-Maure, from France. This was very useful since I was going to start a postdoc there shortly after but I didn't know many people in Paris yet.

And finally, but not less important, the economic support from the organizers gave me this opportunity since, as a graduate student, I did not have much chance to travel. Now I am going to start a position in Austin, TX, but still, I would be happy to participate in future BIRS programs.

Good job!!

336 Lei Feng, Ph.D. Student, University of Toronto

I attended the Banff DES Workshop in May 2004. It was my first time to attend any academic conference or workshop in my Ph.D. study. I felt excited to meet those professors and follow students whose names had been very familiar to me through their publications. I could clarify some puzzles about their work in person and discuss with them on any possible topics. In the workshop, I noticed that some researchers' works might be helpful to me, but I had never thought to check out those kinds of publications. The wonderful effect of that workshop is to organize people with similar topics but different perspectives together. The discussion was fun and inspiring.

I presented some premature ideas in the workshop. Receiving positive feedback, I felt more confident on my work. Now the idea becomes polished. I am testing the idea on various benchmarks and hoping to write a good paper about it.

I hope I have chances to return Banff in the future. There are still a lot of beautiful scenes I have not visited.

Thank you for your organization!

337 Yuval Peres, Professor, Departments of Statistics and Mathematics, University of California-Berkeley

I attended (and helped organize) one two-week meeting at BIRS, and have already accepted two invitations for additional visits.

The two weeks I spent at BIRS have motivated much of my work in the 18 months since I visited there. In particular substantial progress was achieved there in work with Balint Virag (Toronto) on "zeros of the IID Gaussian power series" (paper to appear in the leading journal Acta Math) and in work with Dimitris Achlioptas (Microsoft Research): resulting paper appeared in Journal of the AMS, as well as in ongoing collaborations with Alexander Holroyd (UBC).

Until 2003, the leading venues for week long meetings were, perhaps, Oberwolfach (Germany), MSRI (California) and the Newton institute (England). In a very short time BIRS has joined their rank, and (having visited all of these institutes) I would say that BIRS is now the most inspiring and well equipped venue for mathematical meetings I am aware of.

The existence of BIRS is a valuable addition to the mathematical landscape in North America, and in particular raises awareness of the vigor and stature of Canadian mathematics and encourages more effective collaboration between Canadian mathematicians and Mathematicians based elsewhere.

338 Rolf Schneider, University of Freiburg, Germany

I am glad to hear about the proposal being put together for a renewal of the Banff International Research Station, and for an expansion of its operation. I have been there this year for the first time, after more than 25 visits to the Mathematisches Forschungsinstitut Oberwolfach. My impression was that BIRS is an equivalent to Oberwolfach on the North American continent V among mathematicians this says enough to praise it. These opportunities to meet new people and to exchange information about latest results in the own and neighbouring fields are of the highest value for the progress of our science.

339 Jian Pei, School of Computing Science, Simon Fraser University

As a participant to the BIRS data mining workshop, the workshop helped me a lot. It was the first academic meeting I took part in after I moved to Simon Fraser University. One unique feature I like very much is the joint effort from both academia and industry. It provides me important information about the industrial applications. The connections to industrial people are equally important.

I fully support the growth of BIRS, and believe that it would strongly help many junior faculty members like me in Canadian universities.

340 Dimitris Achlioptas, Microsoft

I participated in http://www.pims.math.ca/birs/workshops/2003/03frg003/participants.html

During my stay there, Professor Yuval Peres and I had the opportunity to collaborate on (what we thought were) the final stages of our article http://www.pims.math.ca/birs/workshops/2003/03frg003/participants.html

It turned out that while working on the final version to submit, we reopened an open question in our work and completely settled it! This is now a significant part of the article. I believe that the environment and pace at BIRS was instrumental in allowing us to revisit the question.

Also, I had the opportunity to meet Balint Virag for the first time, with whom I had a number of very interesting research discussions.

341 Maarten van Emden, Department of Computer Science, University of Victoria

I attended the workshop on Belief revision, constraint programming, and combinatorial optimization May 24-29, 2003, organized by R. Goebel.

This workshop was an enormous boost to my research. I had been specializing in constraint programming, considering it as an offshoot of logic programming. I was only vaguely aware of its connections with AI and with OR. Not only was it an eye-opener to learn about such connections, but it came with prominent researchers in these other areas that I found myself sitting next to during the talks or during the lunches and the dinners.

BIRS is created to be the ideal research environment. Part of it due to whoever created the mountains and the views. The rest is due to the amenities. That includes the ideal connection to the internet, the campus-like atmosphere, the pleasant walk to a nice town, and the great food. The list is too long to include here. But special mention should be made of the excellent network and computing facilities. A good scientific conversation nowadays requires frequent references to things on WWW. BIRS is near-ideal for this: I had a terminal with a Unix account in my room as well as an instant connection for my laptop. I would not be surprised to find wireless access on my next visit.

This fantastic environment works directly, in the obvious way. I should also mention that stars like Pulleyblank and Hooker would probably not have come if the workshop had not been in Banff. I think this is an important effect.

But equally important contacts for me are in BC. Science administrators might think that I don't need help in getting to meet these. The reality is different. My meetings with Hare, Mackworth, and Havens were long overdue. All in all, I had valuable interactions with at least 50other meeting in recent years has come close to that percentage.

342 Volker Gebhardt, School of Quantitative Methods and Mathematical Sciences, University of Western Sydney

I participated in the workshop "Braid Groups and Applications" in October and this was indeed extremely beneficial for my research. I am still in the early stage of my academic career and meeting colleagues and establishing new contacts and collaborations hence is very important for me. The workshop at BIRS proved to be valuable and successful in this respect.

I started a collaboration with Prof. Joan Birman and Dr Juan Gonzalez-Meneses at this meeting. It was the first time I met them; we had been working separately on the conjugacy problem in braid groups and decided at Banff to join forces. We cannot report papers yet (the workshop was only 7 weeks ago), but we have made some progress and are very optimistic.

I was invited to visits to New York and Seville (Spain) during the workshop. The new collaboration initiated at BIRS also lead to a grant application (travel funds). The outcome of this application is still open.

I was also asked during the workshop to write a survey article ("Conjugacy search in braid groups" under review for publication in Applicable Algebra in Engineering, Communication and Computing). I am not sure whether this would have happened otherwise, so I definitely count this towards the benefits of attending the workshop and meeting colleagues working in my area.

I would like to take the opportunity to thank you and the very supportive and friendly staff at BIRS and I hope you can keep up or even expand the good work!

343 Robert Lipshitz, Mathematics Department, Stanford University

I am a graduate student at Stanford University, and participated in the BIRS / MSRI "hot topics" workshop in 2003 on "Floer homology for 3–manifolds." My participation was, for me, quite productive. Most specifically, in conversations with several of the other participants (P. Melvin, J. Rasmussen, and Z. Szabo) I became aware of a conjectural formula for the Maslov index in Heegaard Floer homology, which I was able to prove with the techniques I had been developing. The formula was also one of the last steps in a project I was working on; knowing what was expected to be true made it significantly easier to proceed.

More vaguely, the talks during the workshop made me more familiar with work related to mine. This helped suggest directions likely to yield interesting results later. It also allows me to avoid duplicating work currently being undertaken by other people.

The environment at BIRS was ideal for discussing mathematics. The staff took care of all non-mathematical details so that we could focus on doing mathematics. Being able to walk in the mountains while discussing our work created a relaxed but focused atmosphere, leading to a pleasant and productive trip.

344 Jan Slovak, Vice-rector for Strategy and Development, Masaryk University in Brno, Czech Republic

I am very pleased to hear about your plans concerning BIRS. I had the pleasure to participate the 5-day workshop 04w5006 Conformal Geometry, held in the period Jul 31 through Aug 05 this year.

I must say the facilities, the working atmosphere, the Nature around had not been matched by my earlier experiences with similar workshops worldwide. Moreover, the organizers put together various groups of researchers seemingly staying wide apart, but with matching interests or goals. Thus I had learned a lot and I also closed new partnerships for my further research. In particular, my interest in the so called Q-curvatures had been initiated right there.

I hope very much to be able to come back to BIRS at another occasion.

345 Kurt Jetter, Professor of Mathematics, Universitaet Hohenheim, Germany

I want to take the opportunity to thank you once more that you have given me the chance to participate in a workshop at your institute at Banff. This is a beautiful setup giving researchers the possibility to combine their scientific efforts with gorgeous experiences from nature.

The workshop on 'Applicable Harmonic Analysis' in June 2003 has had a big impact on my own work. Not only that I could meet some old friends and dear colleagues: It was, in particular, a very good opportunity to meet some strong young people from North America working in this area. Concerning the subject, this workshop has confirmed my decision to go more into the new and challenging subject of applications of frames to problems in signal processing.

So thank you again. And I do hope that I will have the chance to meet there in the future,

346 Jan Wiegerinck, Department of Mathematics, University of Amsterdam

I am happy to explain how useful participating in the workshop pluripotential theory has been for my research. It boosted an E-mail cooperation with Poletsky, who was also participating.

Moreover, meeting Ransford, whom I had not expected to see, because he works a little outside my field, helped me to answer a nagging question (in fact he solved it!)

The workshop was well organized. The format, bringing together experts from within a field with some very good people who can make connections to other parts of mathematics, is interesting, and as I explained, turned out very well for me.

The conditions created by PIMS at BIRS are excellent!

347 Rachel Kuske, Canadian Research Chair, II, Department of Mathematics, University of British Columbia

This letter is in support of the funding renewal for BIRS. I also hope that its operations will expand.

I have been involved in a number of meetings at BIRS, all of which have been very productive and enjoyable.

My first visit to BIRS was as coorganizer of the PIMS/IMA Graduate Students Mathematical Modeling Workshop in May, 2003. BIRS was a great place for hosting this workshop, with an environment that supported the groups working in teams. We received a lot of positive feedback from both the students and mentors.

The second time I was at BIRS for a Workshop on Localized Patterns, in August, 2003. Again the environment at BIRS made it a perfect place to interact with experts in the workshop.

In summer 2004 I had the opportunity to organize a 2-week Research in Teams on Stochastic Differential Delay Equations. The BIRS RIT provided a much needed opportunity to meet with specialists in this area over a longer period, bringing together a variety of different viewpoints. There are a number of ongoing projects as a result of this RIT.

In Summer 2005 we will hold a two day workshop at BIRS, which is the second Connecting Women in Mathematics across Canada workshop. We look forward to holding this at BIRS, as we feel it has the a great setting for a small meeting such as this.

I look forward to seeing BIRS continue in its vital role in the support of research in the mathematical sciences.

348 Otmar Scherzer, Institute of Computer Science, University of Innsbruck

I have participate at two of the meetings at BIRS. The meetings always have been very stimulating. The location is extremely exciting. There is a relaxed atmosphere where you can do significant exchange of research ideas with participants. I hope that you can expand this activity in the future. Compared with Oberwolfach in Germany the only thing that is missing is a big math library.

349 Bijan Zangeneh, PH.D student, Sharif University of Technology, Iran

Thank you for your email. It was a pleaser to be in Banff and participate in workshop in SPDE. I learn a lot and one of my MSc. student work on papers I brought from Banff and my Ph.D student working on subject I learn from Banff

350 Fedor Malikov, Department of Mathematics, University of Southern California

I was very happy to participate in a 2003 Banff conference on "Motivic integration, elliptic genus, and chiral de Rham complex". Thanks to the efforts of the Banff staff and the conference organizers, this proved to be an excellent and highly stimulating experience.

351 Christian Schmeiser, Institut fuer Angewandte Mathematik

I have participated in the research group on 'Kinetic Models for Multiscale Problems', Aug. 21 - Sept. 4, 2004, at BIRS. I have a simple comment: This was one of the most productive and enjoyable meetings I ever attended.

Both the format of 'focussed research group' as well as the environment and infrastructure at BIRS are close to perfect.

¿From my point of view, the participants where a mixture of people whom I have worked with for a long time, and people whose work I am less familiar with. The format allowed me to both make significant progress in ongoing research cooperations, and to learn about new approaches I was not aware of before. In particular, the work with three other participants of the research group lead to two new publications on macroscopic limits of kinetic transport models and on dimension reduction of a class of nonlinear Schroedinger equations.

I am certainly looking forward to further visits to BIRS in the future.

352 Carl R. Riehm, Professor Emeritus of Mathematics, McMaster University, Managing Editor of Publications, The Fields Institute for Research in Mathematical Sciences

I was one of the organizers for the BIRS workshop in Quadratic Forms, Algebraic Groups and Galois Cohomology. In my view our workshop simply could not have been more successful in its goal furthering research in these areas.

One of the principal effects of the conference was in the cross-fertilization between these subjects. The algebraic theory of quadratic forms began in earnest about 40 years ago and before too long it was realized that many of its results were prototypes for theories in other subjects, most especially in algebraic groups and Galois cohomology, so much of the development in these latter two fields concerned itself with these generalizations for several years thereafter.

More recently there has been a significant influence in the other direction: the remarkable and revolutionary methods of Grothendieck in algebraic groups, algebraic geometry and cohomology, which have resulted in several Fields Medals as well as the solution of Fermat's Last Theorem, have in turn had marvellous ramifications in quadratic forms, which could only have been dreamt of a few years ago. This, I think, was the major theme of our workshop - the promotion and dissemination of these methods to the larger "quadratic forms public". This process was greatly enhanced through the presence of almost all of the major figures in these areas, including Vladimir Voevodsky, one of the Fields Medal winners in 2002, Fabien Morel, Andreas Suslin, and Alexander Merkurjev.

The physical facilities at BIRS could hardly be improved upon. They greatly contribute to the fertile atmosphere which encourages collaboration and the exchange of ideas so important to mathematical research. BIRS has in its brief life become a worthy North American counterpart to the Mathematisches Forschungsinstitut Oberwolfach in Germany, and the Centre International de Rencontres Mathematiques in Luminy, France. It has already had an impact on the level of research in Canada and the United States, and its continuance is of cardinal importance to mathematics research in our two countries.

353 John Etnyre, University of Pennsylvania

I have been invited to two programs at PIMS, "Topology in and around dimension three", September 13 to 18, 2003 and "Floer homology for 3-manifolds", November 08 - 13, 200. I was able to attend the first one but, unfortunately, not the second (thought I sent a graduate student there). From my experience and reports from my graduate student and others, both conferences were incredibly successful.

During the first conference I was able to catch up on what has been happening in fields very close

to my own. I work in contact and symplectic geometry. These areas have an intimate connection with the topology of low dimensional manifolds. Despite this connection it is not always easy to keep up with the fast moving world of three and four manifold topology. This conference was invaluable to me for this purpose.

During the second conference, two amazing applications of contact/symplectic geometry to three manifold topology were found. Oszvath and Szabo reproved a characterization of the unknot in terms of Dehn surgery using their Heegaard Floer invariants and Kronheimer and Morowka verified that all knots satisfy property P. The main new ingredient in these proofs was a kind of symplectic capping argument supplied independently by Eliashberg and myself. Thus four strong papers to came directly out of that conference. Right after the conference I as able to use Eliashberg's ideas to write a paper illuminating the nature of contact structures on 3-manifold. (More specifically, I was able to find lower bounds on the genus of open books supporting a given contact structure in certain circumstances. This is the first such result.)

All said both conferences were some of the best conferences I have recently been to or heard about recently. I find the atmosphere and facilities at PIMS to be ideal for working and interacting with other mathematicians. I am sure that any investment one can make in PIMS will pay huge dividends.

354 Tony Shardlow, University of Manchester

Stability and Computations for Stochastic Delay-Differential Equations Dates: July 24 - August 7, 2004

Research in Teams: Rachel Kuske (UBC), Salah-Eldin A. Mohammed (Carbondale), Evelyn Buckwar (Humboldt), Tony Shardlow (Manchester)

I am writing to support the Banff International Research Station, which I visited in the summer of 2004 as part of the Research in Teams programme. I was struck by the boldness of this scheme even before I arrived; there is a definite buzz in the mathematics community to this venture. The choice of location is truly beautiful and stimulating of itself and the facilities provided by the BIRS centre are first class. For me, it was very refreshing to travel and work with three like minded people together for a concentrated period. Conferences are very busy and it is hard to find long to talk to one person and similarly visits to a university often suffer from a host's many commitments. It was also a pleasure to mix with a variety of other mathematicians passing through BIRS.

The participants of my BIRS programme are four mathematicians who had met on the conference scene with complementary research interests but have had little collaboration. I was pleased with my research output during this period. I was able to complete the paper [1], with helpful discussions with Salah Mohammad, and to begin and make good progress with paper [2]. I had no idea we could have solved the problem in [2] before we came. Some other ideas were planted during our two weeks that I hope will ripen in the future.

I am looking forward to visiting BIRS in the summer as part of "Mathematical Issues in Molecular Dynamics"

[1] Geometric Ergodicity of Dissipative Particle Dynamics, T. Shardlow, Submitted, Stochastics and Dynamics.

[2] Weak convergence of numerical methods for stochastic differential delay equations, E. Buckwar, R. Kuske, S. Mohammad, T. Shardlow. In Progress.

355 Alice Guionnet, UMPA, Ecole Normale Superieure de Lyon

The meeting at Banff was particularly nice. It allowed me to meet researchers in my branch that I never met before, in particular from Japan, and also give me the opportunity and large time to talk with people I knew.

356 Genevieve Walsh, Mathematics Department, University of Texas

I attended the "Topology in and around dimension three" 5-day workshop in September of 2003. At this time, I had just received my PhD. This conference was very influential for me for several reasons:

1) I heard lots of talks that were directly related my work. Also, because of the informal atmosphere with lots of time allowed for conversation, I was able to talk to many of the speakers about what they were doing, get ideas, and understand trends in the field much better.

2) I got to present my results to more senior people in my field. This resulted in me being asked to give talks at several other conferences, and getting advice.

3) Again because of the informal atmosphere with lots of time for conversation, I started working with Daryl Cooper. We submitted our paper "Virtually Haken fillings and Semi-bundles" this summer. This work began at this conference.

I would rank this as the best conference I have attended since I graduated (and I've attended lots!) Especially useful is the fact that attendants eat and live near each other. This really facilitates lots of mathematical chatter, and makes these conferences productive.

357 Steven Shreve, Department of Mathematical Sciences,Carnegie Mellon University

I participated in the BIRS Workshop "Semimartingale Theory and Practice in Finance," June 5-10, 2004. That meeting had several effects on my own thinking about these topics. I list four below.

1. I met Rama Cont and became aware for the first time of his numerical work on jump diffusion models. That has been useful to a Ph.D. student at Carnegie Mellon, who is writing a dissertation on numerical methods for solving and calibrating models in finance and economics.

2. Marek Musiela presented a methodology for handling stochastic volatility models that is used in practice but lacks theoretical foundation. A student I am supervising has begun reading some of the practitioner literature on stochastic volatility, and although he has not chosen a thesis topic yet, there is a good chance Marek's talk will be relevant to his eventual research.

3. I met a young researcher, Chantal Labbe, who just finished her Ph.D. at the University of Waterloo. I have recently been asked to review her NSERC proposal, and having seen her present her work is a significant help to me as I do this.

4. I had the opportunity to present my own work and receive comments and suggestions from those present.

358 Robert Pollack, Department of Mathematics, University of Chicago

I am writing to describe an extremely positive experience I had at a BIRS workshop in August of 2003. (It was entitled "Current Trends in Arithmetic Geometry and Number Theory".) Besides the extremely interesting series of talks that were given, a major plus to this conference was its structure. By having food available in the same area as the talks everyone stayed nearby allowing for a great deal of mathematics to be discussed between talks, at lunch, dinner and especially in the evening. In fact, Matthew Emerton and I worked out a large technical section of our paper "Variation of Iwasawa Invariants in Hida families" in the evenings of that conference. Emerton and I both lived in Chicago for two years around this conference, but we in fact did as much math together in that 5 day period as we had for months surrounding the conference! This I attribute to the great intellectual environment provided by BIRS.

359 Daniel Weiskopf, Institute of Visualization and Interactive Systems, University of Stuttgart

I'd like to express my thanks that I had the opportunity to participate in the BIRS workshop on "Mathematical Foundations of Scientific Visualization, Computer Graphics, and Massive Data Exploration". The organizational structure of the workshop and the BIRS facilities provided a most productive setting for scientific exchange and discussion of new ideas.

Please keep up the excellent work!

360 Ian Graham, Professor of Mathematics, University of Toronto

I was one of four participants in a "Research in Teams" project held at BIRS May 22 - June 5, 2004 and entitled "Geometrical Analysis in One and Several Complex Variables". The others were Joseph A. Cima (Chapel Hill), Kang-Tae Kim (Pohang University of Science and Technology, Korea), and Steven

G. Krantz (Washington University, St. Louis). The group was very enthusiastic about the "Research in Teams" format, and felt that it provided an opportunity to carry out joint work which it would have been very difficult to accomplish without an intense period of concentration with all of us present. In addition, the setting, facilities, and support staff were wonderful, and contributed to making this one of the most pleasant research experiences we have ever had.

We considered some questions in infinite dimensional holomorphy which use geometric techniques from several complex variables. While I have worked in several complex variables for many years, I had done comparatively little work in the infinite dimensional case. With the period at BIRS as a catalyst, this has now become one of my major interests.

We proved a theorem which is somewhat in the spirit of the classical Schwarz lemma, that is a criterion for a holomorphic self-mapping of a domain in a Hilbert space with a fixed point to be biholomorphic. This is the subject of a paper entitled "The Caratheodory-Cartan-Kaup-Wu theorem on an infinite-dimensional Hilbert space", which we have submitted for publication. We have continued to think and to correspond about questions in this area, and are currently trying to improve on known sufficient conditions for a holomorphic mapping in infinite dimensions to have a holomorphic inverse. We hope that this will become the subject of a second paper.

The Banff International Research Station is a unique research facility which will have (indeed, already has had) considerable impact on mathematical research, both nationally and internationally. I cannot think of a more deserving project.

361 Reinhard Illner, Department of Mathematics and Statistics, University of Victoria

I was fortunate to be co-organizer of a focussed research group with 11 participants (Kinetic Methods and Multiscale Models, August 21-September 4, 2004) and found it the most productive format of a meeting/ workshop I have ever been involved with. As for the details of this workshop, I refer to the report which I submitted shortly after the event. Suffice it to say that the atmosphere of BIRS, the great facilities for lectures, group work and extracurricular activities, the computer facilities and the highly competent and friendly staff provide an environment which is highly conducive for productive research. Indeed, our group completed about five research papers during these two weeks, and we identified numerous promising avenues for new research.

I hope BIRS will continue to offer such programs. They are equal to or better than any others I have been involved with (and I have been to Oberwolfach many times).

362 Brian R. Wetton, Department of Mathematics, University of British Columbia

I am an enthusiastic supporter of BIRS. I co-organized the Computational Fuel Cell Dynamics-II (CFCD-II) in the Spring of 2003 and am getting ready for the follow-up meeting CFCD-III in the Spring of 2005. I also attended the meeting on thin films at the end of 2003 and recently attended a two day MITACS theme meeting there.

I am most appreciative of the opportunity to host the fuel cell modelling meetings at BIRS. For such an important application, one rich in interesting phenomena, PEM fuel cells has attracted relatively little interest from modelers, both analytic and computational. Until the last few years, the number of rigorous attempts at modeling fuel cell performance were few. Certainly the field had received little attention from mathematicians. However, the importance of this activity was clear: to develop understanding of fuel cell processes and their interactions; to develop computational fuel cell models to permit faster and more cost efficient design optimization.

The CFCD meetings are an attempt to give focus to this activity. We have brought together mathematicians, engineers, and industry representatives in the PEM fuel cell community to exchange expertise and find common ground. It is the goal of the workshops to set a framework for future research directions and seed multi-disciplinary efforts which will lead to the development of a new generation of analytical and computational tools for PEM fuel cell design.

The venue is superb and the scenery, the hospitality and the food were fantastic. The cachet of Banff brought a number of the more important participants in the field that might not otherwise have attended. The beauty (and isolation) of the location kept many there longer than they had originally planned. The scientific discussions continued long after the talks

were over. The CFCD-II meeting was one that will shape the future of our fledgling field for years to come. Our thanks to the staff and directorship of BIRS for this opportunity and the chance to return in the Spring of 2005.

363 Arif Babul, Director, Canadian Computational Cosmology Collaboration

It is with great pleasure that I write this testimonial in support of the the Banff International Research Station. I was the lead organizer of a "hot topics workshop" titled "Galaxy Formation: A Herculean Challenge" held at BIRS in November 2003.

The BIRS facilities and the workshop program offered us a unique opportunity to bring together some of the most active and prominent researchers, both well-established leading experts as well as young dynamic rising stars mostly from Canadian and American institutions, in the area of computational cosmology to engage each other in a stimulating yet relaxed and low-pressure setting in order discuss freely and openly problems with the existing approaches as well as possible solutions. The meeting was an all-around success. The participants were tremendously impressed by the location, the outstanding organizational assistance offered by the BIRS staff and by the excellent facilities. The relaxed setting facilitated open and frank discussions of the challenges in modeling the formation of cosmic structure, particularly galaxies – something that typically does not occur at larger meetings. And the ample unstructured time gave participants opportunities to engage in constructive dialogues and to formulate plans for collaborations and code comparisons. Towards the end of the meeting, more than five new collaborative efforts had emerged. To the person, the participants felt that the BIRS Workshop on Computational Cosmology should become regular event. I end with the following quote from a message sent to me after the meeting by J.P. Ostriker: "It was among the most productive scientific workshops that I ever attended... Informal but intense. And very well run. So I do hope that these can continue."

There is no question that BIRS is an extremely valuable asset for the North American research community working in Mathematics and related fields, and I look forward to organizing another (very) successful workshop at BIRS in the near future.

364 Montse Corbera, Universitat de Vic, Spain

My participation in a workshop at the Banff International Research Station has been a very useful experience to me. Thanks to the high level of the participants in the workshop I caught new ideas for future works and some new ideas to continue exiting ones. During t his workshop I also have the opportunity to contact with new people and discuss largely on subjects related to my research. I though that this have be en possible thanks to the tranquillity of the place and its working atmosphere.

365 Ricardo Maronna, University of La Plata, Argentina

I have taken part in the workshop " Robust Analysis of Large Data Sets" on June 5-12 2004. The BIRS has given us a relaxed and at the same time stimulating environment in which we were able to communicate and collaborate, and has no doubt helped us to greatly accelerate our research. I hope the BIRS will be continuing to offer the scientific community such excellent opportunities in the future.

366 Alistair Blachford, PhD candidate, Zoology, University of British Columbia

I attended the Mathematical Ecology and Evolution Workshop at BIRS in March this year. It was a very valuable experience for me, and I was impressed by both the wisdom of setting up that kind of exchange of ideas, and the wisdom in the design of the facilities.

I went to the workshop somewhat intimidated by the prospect of presenting a potentially naive mathematical problem to a group of mathematicians. As it turned out there was, indeed, no ready mathematical solution to the biological puzzle I posed. But I gained much more than the solution to a single problem.

Throughout the workshop, as I watched mathematicians tackle biological problems, I noted that their way of analytically thinking was very familiar. They weren't mutant thinkers at all and, even better, their bag of tools was not endless. I started to recognize that there were only a handful of basic mathematical techniques, and that much could be accom-

plished by reformulating problems so that one or two of these could be applied.

The fact that a lot of the magic of math disappeared was an empowering thing for me. It made me more confident of my potential to expand my own mathematical skills, and lowered any inhibitions I would have in approaching mathematicians for help in the future.

Is this not exactly what education, and the catalysis of research is all about? I think so. I hope a great many others will be able to have the kind of experience I had at BIRS.

367 George A. Elliott, Department of Mathematics, University of Toronto

Thank you for your invitation to comment on the first two years of BIRS. I hope that my reply is not too late to be useful. I have participated in three workshops at BIRS, two as organizer—noncommutative geometry and the structure of amenable systems. (The third, a half-size one, on inductive limits of finite groups, finite-dimensional Lie algebras, and other structures was more related to my work thirty years ago than to my recent work, but nevertheless helped me very much in understanding from a category-theoretic point of view what the classification problems that I have been looking at more recently entail.) The two ones that I was involved in organizing fit squarely into my main stream of work during the last thirty years—my work on inductive limits thirty years ago can be argued to be the beginning both of non-commutative geometry and the structure of amenable systems. Both these workshops were major events with many leaders in the subject present; it is almost presumptuous to comment on the effect that something like that can have on the development of the subject, I feel. (Both at the level of collaborations among leaders and education of the more junior researchers—including students!—present.)

As an example of what can happen, and can be very clearly documented, I would like to mention the major new joint paper by Giordano, Putnam, and Skau (from Norway) that was completed at the workshop (and circulated soon afterwards—it will be part of my BIRS report!). This extended the pathbreaking earlier work of these authors on the orbit structure of topological Z-actions (actions of the group of integers, i.e., single homeomorphisms) to the case of actions of the direct sum of two copies of this group.

In conclusion, I look forward very much to the continuation of research at BIRS. (Organizing a large meeting in your own field—to use a topical analogy, referring to other activities at the paradisaical Banff Centre—must be a bit like having a chance to conduct the Berlin Philharmonic!)

368 Michael Ward, Professor of Mathematics, Director of the IAM

I would like to offer my full support for BIRS. In the summer of 2003 I was fortunate to be a co-organizer of a BIRS workshop in Localization Behavior and PDE's. The opportunity to have this meeting was most rewarding. In addition, the support of the staff of PIMS/BIRS in contacting speakers, arranging accommodations, and taking care of endless details, was absolutely first-rate, and indeed essential to the success of the meeting. It is certainly timely (and due) that North America have its own "Oberwolfach". Moreover, the emphasis that BIRS makes in trying to bring together diverse groups of researchers who normally would not have occasion to interact is a great idea and a great stimulus for research. In addition, the balance between pure and applied mathematics in the workshop topics is most encouraging. I do hope that funding for the BIRS initiative is renewed.

369 Hans G. Othmer, Department of Mathematics, University of Minnesota

The purpose of this letter is to record my support for the Banff International Research Station and its goal of promoting research in mathematics, and thereby to support the request for continuation of funding for the institute.

I have participated in several programs and have found them to be of very high scientific quality, and very much at the leading edge of current research. The facilities and staff are first-rate, the location is excellent, and overall I believe the institute fulfils its stated mission very well and complements the institute at Oberwolfach in Germany very nicely.

While no new collaborations have emerged from my discussions at BIRS, it is not because the opportunity did not present itself, but rather that I

am currently over committed and cannot take on more projects. However I know that the meetings are extremely valuable for younger mathematicians who may be looking for new directions or collaborations.

Overall I think that BIRS plays a very valuable role in supporting research in the mathematical sciences, and I strongly support efforts to secure the continuation of funding for the institute.

370 Robin Graham, Department of Mathematics, University of Washington

I have attended two BIRS workshops:

Scattering and Inverse Scattering, 03/22 to 03/27, 2003

Conformal Geometry, July 31 - August 5, 2004.

Both workshops were valuable to me and my research in different ways.

Scattering theory is not my primary field of research, although I have done work that connects to the field. This workshop was helpful in helping me to learn more about the subject and keeping me abreast of current activity and topics of interest. I am presently involved in a joint project with Gunther Uhlmann on boundary rigidity for asymptotically hyperbolic metrics, which, although not directly an outcome of this workshop, was partly enabled by the knowledge and awareness I obtained there.

Conformal geometry is a main focus for me and this workshop has directly impacted my research. At the workshop I gave a talk on recent work of mine. Claude LeBrun commented after my talk that my results might be useful in understanding his "positive frequency conjecture" for conformally compact self-dual Einstein metrics on the ball. This "conjecture" was recently solved by Biquard (Metriques autoduales sur la boule, Invent. Math. 148, 545-607 (2002)) using twistor methods, but a number of people have desired a more direct understanding. As a direct consequence of LeBrun's remarks, I have found a different proof of the LeBrun positive frequency conjecture which I am presently writing up. This is very exciting and is due to the interaction at the BIRS workshop.

In general I found BIRS an excellent place to interact mathematically. I certainly hope the support is continued.

371 Guy David, Department of Mathematics, Universite Paris-Sud 11

As you know, I participated in a workshop in Banff during the summer 2003, and I keep a very good memory of my stay. I appreciated both the very nice facilities and the friendliness if the staff there. I think there was a very nice atmosphere there too, maybe also coming from the mixture with other groups... I think the meeting was very good (and useful for me too), even though I could not really say that any specific result initiated from the workshop.

I hope you get full success wit the renewal.

372 Michael Maher, Professor, University of NSW, Senior Principal Researcher, National ICT Australia

I would like to offer my support for the continuation and expansion of BIRS. I attended a BIRS workshop last year. It provided a wonderful opportunity to meet colleagues from somewhat different fields and to learn the commonalities among our fields. I was able to clarify some of my ideas at that time, and a new direction of research was exposed to me during the workshop, a direction I am now pursuing.

373 Satish Iyengar, Mathematics and Statistics Department, University of Canterbury

I attended the conference on point processes in 2003. I work on stochastic models in neuroscience, especially the generation of spike trains. My participation in this workshop introduced me to others working on hidden Markov models, which provide a very useful conceptual framework for the problems I work on, and provide useful computational tools. I am now working with Professor Vere-Jones on a workshop in New Zealand on this topic. In addition, the workshop taught me information theoretic methods in statistical modeling and introduced me to the use of point process methods in applications as varied as earthquakes, forest fires, computer music, and oceanography.

374 Andrew Dean, Lakehead University

This autumn I assisted with the organisation of a workshop on amenable systems at BIRS. I found the facilities excellent, and the staff very helpful. The Banff Centre is a wonderful environment in which to discuss mathematics. As this workshop was only a month and a half ago, I feel it is difficult at this point to assess its full impact on the field, however I can say that it proved helpful to me in my research. I announced my most recent result, on actions of the group of real, unimodular, two-by-two matrices on C*-algebras, there, and received valuable feedback about it.

375 Torsten Schaub, Institut fur Informatik

This is to support the renewal endeavor of the Banff International Research Station. I was very happy to have participated in a BIRS Seminar. This seminar made me discover other related fields and so enriched me research in a lasting way. The environment as well as the support were extraordinary! And I am truly looking forward to another chance of participating in a BIRS seminar!

376 Tom Hurd, Professor of Mathematics, McMaster University, Walter Schachermayer (Professor of Mathematics, Vienna University of Technology)

It is a pleasure for us to write a letter to support the ongoing mathematical activities of the Banff International Research Station. As a participant (Prof. Schachermayer) and organizer (Prof. Hurd) of the June 2004 program "Semimartingales in Finance: theory and applications", we highly appreciated the opportunity to spend 5 stimulating days in a glorious natural environment, at a meeting of 40 of the world's top experts in the area of financial mathematics. The quality of the mathematics presentations was excellent, and the opportunities for high level but informal interaction between researchers were extremely valuable.

The assistance the BIRS staff made the organization of the meeting very easy, the presentation facilities worked faultlessly, and no glitches got past the technical support. It seems that for future BIRS meetings, the combination of excellent facilities in a beautiful location will always guarantee to attract the world's best mathematicians. Canada should be proud to be hosting this unique facility.

A very specific example of how this type of meeting can be of benefit occurred when the two of us were able to get together to go carefully over a manuscript by Prof. Hurd. The helpful comments of Prof. Schachermayer resulted in major improvements in the work, and its speedy publication in the journal Statistics and Decisions.

One of us (Prof. Hurd) was able to return to BIRS in November for a 2 day program bringing together academics and industry practitioners to discuss matters in financial mathematics. Again, the facility functioned flawlessly, and the attractions of BIRS brought people who might otherwise have not come.

We wish BIRS all success in its renewal proposal.

377 David W. Lewis, Professor of Mathematics, University College Dublin, Ireland

I attended the BIRS workshop on "Quadratic Forms, Algebraic Groups and Galois Cohomology" held from 4 October to 9 October 2003. I found it an especially stimulating conference with many excellent talks and also the opportunity to discuss mathematics with many top-level researchers in this area of mathematics. In particular I talked on some of my very recent work and the discussions after my talk led to improvements to an article which was being prepared for publication.

378 Ken Dykema, Professor, Texas A&M University

I was at the BIRS conference in Free Probability in October. It was my first time at BIRS. What a wonderful place for a conference! The mountains are spectacular. Also, the food was excellent and lodging was very pleasant. The computing facilities were excellent as well. Perhaps most impressive was how smoothly everything functioned: e.g. check-in, computers, lectures, ...

The conference I attended was at a very high level. I gained much from the lectures and from

conversations with participants, some of whom I knew from earlier and others of whom I met for the first time. Often, the knowledge gained from informal and overheard conversations are the most valuable benefits of attending a conference. In the case of the Free Probability conference, there is a quite tangible result of conversations I had with Kenley Jung and Dimitri Shlyakhtenko. We solved a problem that had been open for a couple of years. This solution is contained in our recent preprint, "The free entropy dimension of any DT-operator is 2," which is available from my homepage http://www.math.tamu.edu/ kdykema/Research/Preprints/DT.pdf and should be available tomorrow from the arxiv as math.OA/0412273, and which will soon be submitted for publication. We gratefully acknowledge BIRS in this paper for bringing us together at the conference.

I hope to have the chance to attend more conferences at BIRS in the future. I certainly think BIRS is a valuable use of funding.

379 Richard Nowakowski, Dept of Math. and Stats, Dalhousie University

I have attended 2 events at BIRS. The physical location is, of course, marvellous. The placement is inspired. Having the ability to walk out and relax in wonderful surroundings is a great asset; not having the distractions of a major city allows one to focus on the mathematical problems at hand.

At the last meeting I attended, a MITACS Theme meeting, a group from Acadia, Dalhousie, Montreal and Regina worked intensively for two days. The discussions inspired two PhD topics and three papers (all in progress).

I am also the organizer of an upcoming BIRS Combinatorial Game Theory Conference. The financial support (i.e. no room and board or rental fees) will allow participants from Japan, North America and Europe to attend, many of these have not met face-to-face before. The subject has a large computational aspect. The practitioners of the subject are split into two distinct groups, those in CS and those in mathematics. The computer and lecture room facilities will allow us to explore all facets of the discipline.

380 Christian Skau, Dep. of Mathematical Sciences, Norwegian University of Science and Technology

I have attended two workshops at BIRS,giving a talk at both:

(i) "Dynamics and related topics",May 29-June 3,2003.

(ii)"The structure of amenable systems",October 30-November 4,2004.

Besides,I have been part of a "Research in Teams" project together with Profs. Ian Putnam,Univ. of Victoria, and Thierry Giordano,Univ. of Ottawa, April 26-May 10,2003.

The three stays at BIRS have benefited my research in a very positive way.Let me be very concrete:During the research-in-teams stay, my collaborators and I made an important breakthrough on a project we had been working on over a period of several years. This resulted in a long joint paper,"The orbit structure of Cantor minimal Z-2 systems",which has been submitted to a journal for publication.The working environments at BIRS are so exceptionally good and inspiring that I have no hesitations to say that it was conducive to our success.

At the workshops I have met mathematicians with expertise in other areas than my own,and it has been enormously useful to discuss with them and get new ideas.Often it turns out that we have been working on problems that apparently have little or nothing in common,but which turns out on closer inspection to be related in a deep way.I could be more concrete ,but I am afraid it would become too technical.

Finally,one must mention the breathtaking scenery at BIRS in Banff with the majestic Canadian Rocky Mountains.Inspiring is a trite word to describe the impression it makes on a person. The trail up to Tunnel Mountain is just a perfect hike in order to get some highly needed exercise,trying to lose some of the inevitable weight one gains at the incredible lunches and dinners that one gets. The personnel at BIRS are doing a marvellous job making the stay there enjoyable.

381 Ruben Zamar, Professor of Statistics, University of British Columbia

I was one of the co-organizers of the Focused Research Group on Robust Analysis of Large Data,

from June 6-19, 2004. BIRS provided a great environment to explore and discuss possible interplay between robustness and data mining. The discussions and conclusions from this meeting will have a large and lasting effect on our discipline. In addition to the general discussions and presentations, participants discussed ongoing and new research projects. I will give some examples of papers and projects where I was personally involved: 1) Stefan Van Aelst and I completed the writing of the paper "Grouping linear patterns using orthogonal regression", now accepted by Computational Statistics & Data Analysis. 2) The paper "Maxbias of Correlation Estimates" which Christophe Croux and I will soon submit for publication . 3) A paper on a new model for contamination of large multivariate data which we are writing with Victor Yohai and Stafan Van Aelst. 4) The proposal "Multivariate growth charts and robust quantile estimation" that Ying Wei, Matias Salibian and I submitted to NSF. In summary, this workshop was one of the best meeting I ever attended. Obviously, I strongly support BIRS and consider it an important engine for the development of the Mathematical Sciences.

382 Paul Muir, Computing Science Co-ordinator, Department of Mathematics and Computing Science, Saint Mary's University

Thank you for your e-mail of Dec. 2nd, 2004. I actually received it while I was attending my first BIRS event - a two-day MITACS Environment and Natural Resources Theme Meeting, from December 2 to December 4, 2004, organized by John Stockie (Simon Fraser University, MITACS).

The meeting brought together members of the four industrial research projects housed under this theme, as well as an invited external speaker, Linda Petzold, who is jointly appointed to the Department of Mechanical and Environmental Engineering and the Department of Computer Science at the University of California, Santa Barbara. Linda, who is one of the world's leading experts on the numerical solution of differential equations, gave two excellent talks during the meeting, on "Sensitivity analysis of differential-algebraic equations and partial differential equations" and "Sensitivity analysis in condition and error estimation".

I am very impressed with the environment and facilities provided to researchers. The comfortable living quarters, equipped with terminals in the rooms, and the convenient proximity of the dining hall and lecture rooms, allows one to become immersed in the experience. I was involved in the formal meeting event as well as informal discussions from the first thing in the morning until the last thing at night!

I found the meeting to be very useful in quite a number of ways. In addition to getting an overview of the work that is underway in the other projects that are part of the MITACS Environment and Natural Resources theme, I had several other specific opportunities to enhance my research:

(i) The MITACS project of which I am part, "Efficient Numerical Methods for the Time Integration of Unsteady Fluid Flows" held two meetings during our time at BIRS, during which we all had a chance to bring each other up-to-date on the work being conducted by each individual group with the project. More significantly we had the opportunity to discuss coordination of our efforts towards the goals laid out by our industry partner.

(ii) I had a chance to hold a meeting with my former post doc, Rong Wang, who is now at the University of Saskatoon, which allowed us to discuss work related to a series of papers we have written and are continuing to develop. We were able to bring each other up-to-date on our current efforts and to discuss our next steps on this work, some of which came to light during this BIRS meeting (see (v) below.)

(iii) In a meeting presentation by Paul Chang, who is with the "Mathematical Modelling and Scientific Computation" headed by Brian Wetton, University of British Columbia, I learned of a system of boundary value ordinary differential equations which are central to their modelling of fuel cells. One of my own research areas is in the numerical solution of boundary value ordinary differential equations and I was able to provide some suggestions for possible improvements to the numerical approach they are currently employing. Brian Wetton has agreed to send me, in February 2005, a preprint describing the technique they currently employ in the treatment of these systems so that I may take a closer look at the problem and investigate enhanced solution techniques.

(iv) During one of the many meal time discussions, I was talking with another of the meeting participants, Brian Carnes, about my recent work in adaptive mesh refinement for systems of parabolic partial differential equations. Brian is currently organizing a mini-symposium on "A Posteriori Error Estimation" at the upcoming Eighth U.S. National Congress on Computational Mechanics, hosted by

the Institute for Computational Engineering and Sciences at the University of Texas at Austin, which will include as a theme recent advances in numerical methods and high-performance computing, and has invited me to give a talk on my work as part of his mini-symposium. The meeting will feature a strong component in computational mathematics, and in particular on adaptive mesh refinement and I expect it to be quite relevant to my work.

(v) Linda Petzold's participation in the meeting was particularly helpful as she is the author of the well-known DASSL software package for the numerical solution of differential-algebraic equations, which is currently employed within the BACOL package for the numerical solution of systems of parabolic partial differential equations, recently developed by myself and my co-authors, Rong Wang, and Pat Keast, of Dalhousie University. We had recent discovered a difficulty with the performance of our package which we were able to isolate to the DASSL software. The robust performance of the spatial error estimation algorithm employed in BACOL depends on the accurate solution of the underlying differential-algebraic equations which arise, and we found that DASSL was not returning solutions whose global errors were within the prescribed tolerances. At the meeting, I had the opportunity to discuss this with Linda several times, and fortuitously it turned out that Linda presented a review of her recent work which she and I think may allow us to correct the problem. She described an approach based on the computation of an adjunct solution to a given DAE system, which can be employed to develop an estimate of the global error. We may be able to use this approach to allow us to better control the global error in the DAE solver, thereby correcting the difficulty in the performance of BACOL for certain problem classes. Linda has provided us with a preprint of a paper which described her recent work and we are currently reviewing it with a plan to adapting it to the BACOL computations.

My experience at BIRS was intense, exhilarating, and of course very helpful in enhancing my research efforts. Please feel free to contact me if you have any questions.

383 Juan Carlos Martnez, Universitat de Barcelona

I participated in a workshop at the Banff International Research Station in May 2004 entitled "Singular Cardinal Combinatorics". I had a pleasant stay in Banff and I found the workshop exciting and very stimulating. During my stay in Banff I obtained a new result in the field in which I am working, which I have already included in a paper that will be sent to an international journal on Mathematical Logic.

384 Kevin Ford, Department of Mathematics, University of Illinois at Urbana-Champaign

I attended a conference at BIRS Nov. 20-25, 2004. You guys really have a first rate facility - computer terminals in every room, a very nice lecture room, superb food and unbeatable natural surroundings. I had a wonderful time and started a new collaboration at the meeting. I look forward to the next conference.

385 Bernard Leclerc, Professor, University of Caen, France

I have participated in 2 meetings at BIRS :

Current Trends in Representation Theory of Finite Groups, in October 2003;

Interaction of Finite Dimensional Algebras with other areas of Mathematics, in September 2004.

Both events have been very useful to me. In both cases, I was able to exchange a lot of information with my colleagues, and to learn the latest developments of the field. In the second program, I have also discussed with Jan Schroer, with whom I am actively collaborating since last year, and whom I can usually reach only by email (he lives in UK). This allowed us to fix the proof of a crucial lemma in a paper which has since then been uploaded on the ArXiv :

Verma modules and preprojective algebras, by C. Geiss, B. Leclerc and J. Schroer, math.RT/0411113

We have also discussed about another manuscript which is now in preparation and should be uploaded on the ArXiv in the next months.

The facilities of the BIRS Station at Banff are quite convenient, and it is a real pleasure to spend a week there. The staff is very cooperative, and the working conditions are excellent. (The only thing which I can think of which could be slightly improved is the conference room, which is a little small, with a board partly invisible from some seats; but this is minor.)

I am looking forward my next meeting at Banff.

386 Changfeng Gui, Professor of Mathematics, University of Connecticut

I have been involved in two BIRS workshops as organizer since BIRS' inauguration. They are wonderful experience for me both scientifically and socially. The first workshop is on Defects and Its Dynamics, the participants range from pure mathematicians to scientists from other fields, such as John Cahn from National Institute of Standard and Technology, a famous material scientist who has developed several important mathematical models and raised many interesting mathematics problems. One major area of my research is on one of his models, and the BIRS workshop was my first time to meet him personally. Through the discussion with him, I understood the physical background much better. I also worked with another participant, Professor Michelle Schatzman during the workshop and figured out an important step in our joint research. The second workshop is on New Development of Variational Methods. The participants included senior mathematicians such as Louis Nirenberg, well established leading experts such as Maria Esteban, Eric Sere, as well as young postdocs and graduate students. During the workshop the participants not only had very inspiring and informative talks but only a lot of discussion and exchange of ideas after talks. The one afternoon social events (hiking) in both workshops were also enjoyed very much by the participants. All participants of both workshops loved the format of the workshops and spoke to me highly about them. Personally these two workshops broadened my research areas, allowed me to meet more peers for collaboration and also offered me a chance to organize important professional activities. I hope to have more opportunity to participate in BIRS workshops in the future.

387 Patrick Keast, Chair, Mathematics and Statistics, Dalhousie University

As Chair of the Department of Mathematics and Statistics at Dalhousie University, I would like to give a Department response to your request for support for the Banff International Research Station (BIRS). This facility, although still relatively new, has already provided several researchers in the Department with wonderful opportunities to come together with colleagues in a stimulating atmosphere and surroundings. BIRS has become part of the research life of the Department.

Four individuals in the Department have made use of BIRS in various ways. Dr. Jeannette Janssen took advantage of the Research in Teams programme to spend a week with Dr. Anthony Bonato on a joint research project. She has described the week as the most productive of her sabbatical, and describes the facilities as excellent. Collaboration at a distance can work well, but, as I know from experience, there comes a time when a face-to-face meeting becomes necessary. Dr. Janssen says that the visit was a crucial step towards a joint paper which she counts among the best of her career. My own use was much more prosaic, but every bit as valuable. The Chairs of Departments of Mathematics and Statistics met there for the annual meeting, in October 2003. I found the experience absolutely wonderful.

In a sense the best part of BIRS is what it lacks. As Dr. Richard Nowakowski says: "I have attended 2 events at BIRS. The physical location is, of course, marvelous. The placement is inspired. Having the ability to walk out and relax in wonderful surroundings is a great asset; not having the distractions of a major city allows one to focus on the mathematical problems at hand."

There is a feeling almost of isolation, a feeling which is reinforced by the mountains. A visitor to BIRS can hardly avoid relaxing and then working very hard. Dr. Nowakowski has just returned from a meeting at BIRS where he worked with colleagues from Acadia, Montreal and Regina on a MITACS Theme meeting. The results were two PhD topics and three papers in progress. Incidentally, MITACS and BIRS together are both powerful forces for the growth of research in the Mathematical Sciences.

Dr. Nowakowski is also the organizer of an upcoming BIRS Combinatorial Game Theory Conference which will attract researchers from Japan, North America and Europe. The financial support for accommodations and board is clearly a big attraction for people who have to come far.

Dr. Bruce Smith has had two visits to BIRS, a 5 day workshop on "Point Processes - Theory and Applications" in June 2003, and the MITACS Biomedical Theme Meeting in October 2003. Fruitful collaborations have grown out of the workshop, and the meeting has led to a future meeting on spatial point processes with applications to forestry which will be be held at the University of Western Ontario in May, 2005. For Dr. Smith personally, the meeting has resulted in the opportunity to initiate joint research in the analysis of complex genetic traits with Ken Mor-

gan and J.C. Loredo-Osti of McGill University.

I hope that BIRS succeeds in the application for renewal. It serves as a wonderful venue for workshops, collaborative meetings and meetings of specialized groups. It also serves as a flagship facility to which Canadian mathematical scientists can invite researchers from other countries, to meet and work in the spectacular surroundings of the Canadian Rockies. I hope that BIRS continues and that it becomes recognized as a national treasure.

388 Nathan Reading, Department of Mathematics, University of Michigan

I participated in the Workshop on Combinatorial Hopf Algebras this August, and it was a great mathematical experience. I was fairly new to the area of Hopf Algebras, but had written one paper containing some applications to Hopf Algebras. My time at BIRS gave me an opportunity to meet and talk to expert in the field, allowing me to learn more about the field, see where my results fit into the big picture, and acquaint them with my results. Thanks!

389 Lance Fortnow, Professor of Computer Science, University of Chicago

I participated in the BIRS workshop on Advances in Complexity Theory held July 4-8, 2004.

We had the greatest collection of computational complexity theorists I have ever seen, even surpassing the Complexity conference or similar workshops at Dagstuhl or Oberwolfach. Of course the beautiful location had a hand in drawing such a strong turnout. I saw many great presentations of exciting new results and had a very enjoyable and productive week.

I gave a presentation at the workshop on my work with my student Rahul Santhanam that later appeared at the FOCS conference in Rome. From that presentation, Oded Goldreich, Madhu Sudan and Luca Trevisan came up with a nice simplification of one of our results. Trevisan continued to work on the problem and we now have a joint paper submitted to STOC (with Santhanam) extending the work of the earlier paper. FOCS and STOC are the two most important theoretical computer science conferences.

Discussions with Eli Ben-Sasson at the workshop eventually led to his planned visit to TTI-Chicago for the spring. TTI is located on the University of Chicago campus and I look forward to working with him.

I consider Advances in Complexity one of the best workshops I have ever attended of the dozens of such workshops I have attended over the past twenty years. I strongly support the renewal of support for BIRS and expanding the number of workshops.

390 Frithjof Lutscher, Center for Mathematical Biology Department of Mathematical and Statistical Sciences University of Alberta

this letter is written in support of the application for renewal for the Banff International Research Station (BIRS).

I have been fortunate to have attended two five-day workshops (Mathematical Biology/Biological Invasions) and two two-day workshops (PIMS postdocs/Ecology Retreat) during the last two years. All four events have been very successful for me in stimulating scientific research and ideas and/or meeting world-class researchers. The unique atmosphere of rather small but focused groups is an ideal setting for intensive and creative discussions. The local organization as well as administration and technical support have been excellent all four times I was there.

The two most tangible results that my participation at BIRS workshops had are (1) an invitation to give a presentation at Worcester Polytechnic Institute together with the encouragement to apply for a visiting professorship there and (2) a face-to-face meeting with a long-distance collaborator to revise and and finish a manuscript. Even though the other meetings and conversations have not yet led to direct scientific results, I consider them an invaluable experience with great potential for future research projects.

391 Amanda Hines, Sundre High School

My experience at the Banff International Research Station was fantastic. We were asked to present at a conference sponsored by PIMS in May of last year.

Our topic was one that we are involved in regarding "Lesson Study" and "Math Fair" in a high school setting. Our audience was fantastic and constructive. We left the conference with so much more than we gave it. The contacts, resources, enthusiasm and support that we received at the conference are invaluable. If the opportunity arises to attend another I would do it in a heartbeat.

Thanks!

392 Mark Spivakovsky, Directeur de Recherche au CNRS in Toulouse, France

I am a participant and speaker of the BIRS workshop on resolution of singularities and birational geometry in December 2004.

I am finding the workshop to be an extremely useful and stimulating experience. The relatively small group gathered here (about thirty people) includes about one half of the world's main experts in resolution of singularities and a very strong crowd in birational geometry. I have learned a great deal from the lectures; I would especially like to single out Jaroslaw Wlodarczyk's lecture on his groundbreaking proof of the weak factorization conjecture and k-star cobordism. This has also been a good opportunity to see Bernard Teissier and to work together on our joint paper "Extension of a valuation centered in a local domain to its formal completion". Probably the most important to me was the work I had to do to prepare for my own lecture on the Local Uniformization Theorem. I worked very hard for two days and two nights with almost no sleep, and the result was a significant advance in my research on resolution of singularities.

In conclusion, I would like to thank you for running such a well organized, efficient and pleasant place to do mathematics, surrounded by magnificent mountains. BIRS is a very important feature for the world's mathematical community and I hope very much that it continues its good work.

393 Andreas Liu, Einstein Institute of mathematics, Hebrew University of Jerusalem

For what it's worth, I'm very glad to offer a testimonial for BIRS, in the hope that it will be able to continue and even grow.

I took part in a workshop at BIRS last spring, when I was still a graduate student; it was the first time I'd attended such a meeting (small and devoted to a single topic). I met there several leading researchers in my field, and our conversations led to my being invited to visit some of them later on. These conversations also introduced me to several problems that motivate my current research efforts. So it was a most fruitful meeting for me, and I hope very much that other young mathematicians will have a chance to visit BIRS in the future.

394 Nima Geffen, Mathematics, Tel-Aviv University, Ramat-Aviv, Israel

This is to express my deepest appreciation for the activities of and at BIRS: the couple that I have actually attended, the ones that I have followed from Canada and abroad. I have, so far, participated in one meeting and one workshop at BIRS. Both have been informative and directly helpful to my scientific work, and much more.

Towards the end of a Sabbatical year I'd spent at UBC, I went to Banff for a Symmetry meeting in August 2001, in honor of Robert Moody, for his 60th birthday. The meeting was very beneficial to me. I've learnt much from THE best people in the field who came from all over to pay tribute to one of their greats. Moody, with his exceptional personality, has presided a delightful meeting, in his easy going, appreciative and constructive way, to make it a truly memorable conference.

What has turned out to be most important to me at that conference, was the meeting, at close range, with Donald Coxeter and his daughter Susan. Geometry being my first (and foremost) mathematical love, I have been aware, and admired Coxeter's work for decades, since my high school days and ever since. Hearing him speak, talking to him afterwards, getting his last manuscript under the door of my room (next door to his, as it turned out), getting to know him and his daughter, Susan, was a heaven-sent experience for me, with implicit effect upon my work and life. In October this fall, during a week spent at the Fields Institute, at the University of Toronto, I devoted some time to study Coxeter's legacy there, and spent hours with Susan, getting from her invaluable material about his life and work. Some of it is to be used in a paper I hope to submit for the RENAISSANCE BANFF meeting next summer, ap-

propriately ending with a COXETER DAY.

An unexpected pleasure that summer, was the international string-quartet competition, which held additional charms (and an unexpected personal experience) for me (and other participants of the meeting, including the Coxeters and Moodies).

In July 2003 I participated in a BIRS 5-day workshop: 'Mathematical Biology, From molecule to ecosystems, the legacy of Lee Segel', organized by Leah Keshet (UBC), Simon A Levin (Princeton), Mark Lewis (Univ. Alberta). As I said right after the meeting to Nassif Ghoussoub at UBC (and neglected, then, to put it in writing), it was the best meeting I had ever attended, with most of the credit due to Leah Keshet (the active organizer, from conception to the last detail, both scientific and otherwise.

The 5 days of the workshop were very crowded. From morning till night (with a full after dinner session) the 5 days (excepting one afternoon that was taken off for a lovely walk, where shop talk was the voluntary order of that time too) were completely devoted to learning, listening, presenting and scientific interaction. Three generations of eager, committed, creative scientists were deeply immersed in exchange of ideas and plans and learning from each other. Many collaborations ensued, mostly from informal contacts, around the coffee tables and round tables (physically and metaphorically) at the common meals (e.g. Adriana Daws, a graduate student at UBC got invited to the Bio Lab at Friday Harbor, by Professor Garry Odell, at one of the conference lunches. Her 3 months there with continuing connection have yielded papers, presentations and have advanced her work ever since). Of special note to me was the open, collaborative, supportive, spirit of the discussions and exchanges, which, as mentioned above, bore fruit right there, and in time to come. In addition to the intensive scientific reporting and work, the atmosphere abounded with a-propos jokes and anecdotes, culminating in a documented set of limericks, in honor of Lee Segel. It was a celebration of deep, useful science as a way of interesting, fun filled life.

The workshop has given me a priceless opportunity to meet the best people (in my view) working in the area, to present my work, to get criticism, hear ideas, and learn what others have achieved. This has proven crucial to my work later that summer and during this past year, which will be acknowledged in a forthcoming paper (with the structural biologist who had initiated the project for which I have done the mathematical modeling and analysis).

Moreover, my the benefits from the workshop have extended, implicitly, far beyond the accountable ones. The one evening I escaped to hear 85 year old Fenivesh play Beethoven on the violin (where Adriana Daws, an active participant in the workshop was too, paying tribute to her father's teacher), the conversations I had with participants of other meetings, the lovely nature; the good will, kindness and generosity of the people around inhabiting it have been a sign of the good people can do to each other and the good work they can do in harmony and good will.

BIRS is an exemplary research station, the very best in my view. I find it fitting that it is in Canada, where consideration, kindness and compassion have been the order of the day (at least more than in any other place that I know). It is an inspiring place to be developed, cherished and used, as much as much as feasible, for the benefit of all.

395 Berndt Brenken, University of Calgary

I'm writing to express my strong and unqualified support for the BIRS programme. Over the past two years I have had the opportunity to not only participate in two BIRS five day workshops, but to also organize a 2-day workshop. These have proven to be remarkable opportunities to be exposed to the current status and progress of vital areas of research. Because of their intimate size they are more focussed on particular areas and directions within a field than conferences tend to be. Also, one can count on the participation of the internationally recognized leaders and experts in these areas, along with great opportunities to establish contacts with postdoctoral fellows and senior graduate students.

I have much enthusiasm for your programme and hope for your success in the expansion of operations from 40 to 48 weeks.

396 Ira Gessel, Brandeis University

The two BIRS workshops that I attended (Recent advances in algebraic and enumerative combinatorics and Combinatorial Hopf Algebras) were both well organized and highly valuable experiences. Both workshops provided me with useful information about what colleagues were doing and about new ideas in my field, and were opportunities to meet new researchers whose work I had not been familiar with.

397 Jerry Levine, Brandeis University

The workshop I attended at BIRS was a very stimulating and enjoyable experience. I had the opportunity to discuss my research with others engaged in similar projects and learn of their recent work. BIRS is a valuable and unique resource.

398 Jean MICHEL, Equipe des groupes finis, Institut de Mathematiques

OK. The workshop on braid groups that I attended in October 2004 was indeed a stimulating experience. I made contact with people I met there the first time: Joan Birman, the organizer, and Volcker Gebhardt from Sydney. This last encounter was particularly fruitful since I will collaborate with him writing software to implement his ideas. I also could renew contact with people I had few occasions to meet apart from such meetings, such as Juan Gonzalez-Meneses. The new results exposed by Gonzalez-Meneses, Gebhardt and Dann Krammer certainly will have an impact on my research. Finally, I had there another occasion to meet collaborators with which I am writing papers, such as Gus Lehrer from Sydney.

399 Sunduz Keles, Assistant Professor, Department of Statistics, Department of Biostatistics and Medical Informatics, University of Wisconsin-Madison

I had an amazing time at the BIRS this summer. It was one of the best workshops I have ever attended. Besides the quality of talks and the stimulating research atmosphere, my room was next to the room of a colleague from the Rutgers University (Rebecka Jornsten, Department of Statistics) and we have started a collaboration at BIRS. We are now actively working on a research project and having biweekly phone conservations. I don't think this would have happened it wasn't for the BIRS workshop and the academic atmosphere provided by the BIRS.

It was pleasure to participate in the workshop and I am looking forward to future events.

400 Anja Sturm, Assistant Professor, Department of Mathematical Sciences,University of Delaware

during my stay as a postdoctoral fellow at the University of British Columbia during the academic year 2003/2004 I had the good fortune to be able to attend several workshops at BIRS, one on stochastic partial differential equations, one on analytic aspects of stochastic processes, and one on population genetics attended by both Mathematicians and Biologists. Each workshop was attended by a large number of world experts in these various fields. I was very grateful for the opportunity to meet them in person (in many cases for the first time) and discuss my research with them as well as learn about their recent work. I also had the opportunity to connect with other young researchers sharing my interests. The research and workshop environment that BIRS has to offer is close to ideal.

401 Sharon Whillans, Elementary Teacher, Edmonton Public School Board

This is how I have been affected and encouraged by PIMS. I am an elementary teacher with The Edmonton Public School Board. Five years ago our school became part of a study to help improve mathematics in our schools. This project was an immersion into the latest in mathematical research and practices in teaching math. Through this we became acquainted with Dr.Ted Lewis and his involvement in math fairs at the university level. This was very exciting for our students. They were able to go to the university and participate in a math fair and other math activities. For many of them, this was their first experience with the university and it opened up all sorts of possibilities to them for their future. It was an invitation from Ted Lewis that brought a colleague and myself to your wonderful facility at the Banff International Research Station.That experience has encouraged us at the school level, realizing the interconnectedness and universality of mathematics. I was able to engage with teachers from Edmonton, Calgary - from the university level, Community college level, junior high, high school and elementary, public

and private schools as well as teachers from Sweden and Taiwan,participating in math activities and dialogue realizing that these teachers struggle with many of the same issues of making mathematics relevant and interesting to our students, in today's political and economic climate.This made me realize the importance of the experiences provided by math fairs. These activities were not frivolous but are on the cutting edge of great mathematical teaching and learning. This has encouraged me to maintain this as part of my teaching practices and to share my knowledge with my colleagues and others in the profession.

402 Carla Kozak,Consulting Services,Edmonton Public Schools

I had the opportunity to attend a workshop provided by PIMS last spring at the Banff International Research Station. This was my first time attending a conference at this centre. Overall I was impressed with the entire facility; from the dining room to the kitchen/common area, I felt welcomed and at home.

The conference was organized for teachers from around the province and one invitation reached as far as Ontario. We represented teachers from urban and rural school districts and all grades from kindergarten to grade twelve.

Our conference focused on specific math activities that our students could learn and develop into a school-wide math fair project. The teachers were able to share resources and ideas from past successful projects and provide support to the participating teachers with their school-wide initiatives. The conference ideas were gathered and complied by Ted Lewis and Andy Lau.

This conference allowed for teacher networking across the province and built many friendships that continue today!

Thank you for this opportunity!

403 Timothy Reluga, Postdoctoral Fellow, Yale University School of Medicine

The Banff International Research Station is a great research facility. The conferences I have attended at BIRS over the last year have helped me mature as a scholar. I write this letter as a voice strongly in favor of the continued and expanded funding of this research facility in the coming years.

My name is Tim Reluga. In June of 2004, I completed my PhD research at the University of Washington. I am currently a postdoctoral fellow at Yale University.

In the last year, I have had the opportunity to attend conferences at BIRS as both a student and an invited participant. In March, 2004, I had the opportunity to attend a 2-day Retreat on Mathematical Ecology and Evolution. In June, 2004, I had an opportunity to attend both the PIMS-MITACS-MSRI Special Program on Infectious Diseases Summer School and Workshop. And in November, 2004, I was invited to and attended a 5-day workshop on Mathematical Models for Biological Invasions.

The organizers of these programs, Mark Lewis, Mark Kot, Pauline van den Driessche, Fred Brauer, James Watmough, Jianhong Wu, Ping Yan, Ed McCauley, Michael Doebeli, and Thomas Hillen, assembled talented and interesting researchers and students in an exciting environment.

My best experience while attending BIRS was a research project that emerged from a talk given by William Fagan on inverse-density dependence in lupin invasions of Mt. St. Helens. This was spontaneous, with several well-known researchers arriving at the problem from different directions, but ultimately collaborating to dissect the problem and arrive at a partial solution before dinner. With the ink on my degree barely dry, this interaction was thrilling. I do not know if the work will be published, for few of the participants considered it a priority. But it was one of the best scientific experiences I've had this year, and something that could not have happened without facilities like BIRS.

I hope that BIRS will continue to receive funding, and that other young scholars will have experiences like I've had at BIRS.

404 Randy Goebel, Department of Computing, University of Alberta

I'm pleased to write in support of BIRS, and especially pleased to explain why I think BIRS was particularly unique in providing the venue for the workshop I ran in May of 2003.

My University of Alberta colleague Bob Moody sold me on the idea of BIRS back at its inception, with his explanation of the vision for BIRS:

to be identified in a way similar to Oberwolfach or Dagstuhl, but to bring something special because of PIMS and Banff.

This has certainly been realized.

In the case of my own BIRS experience, I bought into the idea of using the lure of one of the most beautiful natural sites in the world to bring together world class scholars from three different disciplines. The disciplines were combinatorial optimization, belief revision, and constraint programming.

You must understand that no academic I know would give much attention to my personal passion about why these three areas were so closely related, so I had to exploit all my connections, all my favours, and the lure of a week in Banff, to convince these three communities to gather and discuss the connections between their disciplines.

BIRS was the key. And we succeeded in attracting world class scholars in all areas, to join us for the week, and to set aside busy schedules, scholarly prejudices, and egos, to get right to the heart of the matter: to identify the intersection of concepts and results in all areas, to help build a common understanding.

What was the result? The most important result was not a new theorem or a magnificent and crisp review of the three areas, but a deep and insightful appreciation and respect for the depth of the three areas. We learned new names for important concepts that existed in all areas; we found that the computer scientists working on belief revision were amongst the most abstract mathematicians of the lot, and that the incredible expertise of the combinatorialist modeling could be not just captured, but formally reasoned about within the context of logical constraint programming.

One five day workshop with such incredible and diverse scholars can not immediately give birth to a new discipline, but it is very clear that we all learned a lot from each other and that there is a basis for further future strong and fruitful interaction. Furthermore, it is also clear that every one of us has carried back a new appreciation of all the disciplines to our own institutions.

We know that everyone who participated would be eager to return, to further develop the ideas that emerged from the first workshop. We hope we get the opportunity to do that.

405 James E. Taylor, Postdoctoral Scholar, Department of Astronomy, Caltech

I am writing in support of continued funding for the scientific activities of the Banff International Research Station (BIRS). I am a Canadian post- doctoral scholar, working up until recently at the University of Oxford in the UK, and now at the California Institute of Technology in the US. In November 2003, I was a participant in the BIRS workshop entitled "Galaxy Formation: A Herculean Challenge". This workshop brought together faculty and graduate students from a number of Canadian institutions, as well as international participants from the US, the UK, and Germany, to discuss one of the most exciting problems in current computational astrophysics.

The formal part of the workshop was a conference on a specific topic, namely how to understand the process of galaxy formation and model it computationally. I gave several talks during these sessions, and listened to many interesting presentations by other participants. I think the most valuable part of the workshop, however, was its informal component. It is rare to be able to assemble the right people in the field and keep them all together in the same room for long enough to make progress on a specific problem. In most of the international conferences I have attended, the audience is too large and the topic too broad to do anything more than review work that is actually taking place elsewhere. I felt that the meeting in Banff struck a good balance between broad, international participation and enough focus and intimacy to make substantive progress on the spot.

During the workshop we had several discussions about the key processes in galaxy formation and how to model these computationally. Since the meeting, I have initiated collaborations other workshop participants to study two specific problems, the detailed dynamics of galaxy mergers and the small-scale structure of dark matter around galaxies, using numerical and semi-analytic techniques respectively. Both of these projects are now underway; we expect the first publications related to this work in the new year.

Overall I was very glad to participate in the Banff workshop; I felt that it benefited my research and the field as a whole, and also that it gave international exposure to the excellent work in computational astrophysics currently being done in Canada. I urge you to maintain your support for this sort of activity at BIRS.

406 Yoshihisa Kitazawa, KEK Lab, Japan

I participated a workshop at BIRS on string theory in the summer 2004. It provided me an ideal environment to perform research. I was stimulated by listening the informal seminars by the participants in the morning. We had lively discussions on lunch tables and coffee time in a beautiful scenery. I was also able to work quite a lot in the ample free time. In fact the research I performed at BIRS grew into a paper which will appear by the end of 2004. The preprint number will be KEK-TH-1002. I am happy to support your effort to enhance your quest for excellence at BIRS.

407 Jean-Paul Thouvenot, Centre de Calcul Recherche et Reseau Jussieu, Universite Pierre & Marie Curie

I participated in the workshop "Joint Dynamics" in July 2003 at BIRS I would like to testify that the conference was most welcome as it has been carefully organized around themes which, in dynamics, are not commonly assembled, ergodic theory, rigidity, and algebraic structures, and this, in my opinion, has been for me the source of a lot of benefit and of inspiration. I have solved, together with F. Parreau, a question mentioned in the problem session, which was to prove that if a transformation is relatively mixing with respect to a factor, any isometric extension of it which is relatively weakly mixing with respect to the same factor stays relatively mixing. (This is a relative version of a theorem of D. Rudolph). I insist on the perfection of the material aspects of the conference and on the efficiency of the staff which make the site of Banff one of the best I have ever seen. For all these reasons, I rank this conference at Banff as one of the most rewarding I ever attended.

408 Neil Seshadri, Department of Mathematics, University of Tokyo

Just a short email to express my support for the activities of BIRS.

I am a graduate (Masters) maths student at the University of Tokyo and I participated in the Conformal Geometry workshop at BIRS in early August of this year. As I expressed in a thanks email to one of the organisers, the workshop was the most stimulating and exciting in my short mathematical life. I had a chance to listen to the very latest developments, talk to some of the people who are making them happen and get some valuable feedback on my own research. I got some ideas at the workshop that I discussed further with some of the participants (many of whom I met for the first time at the workshop) later this year and as a result I have formed a clearer idea of a problem I would like to look at for my PhD work. It is fair to say that had I not had the opportunity to attend I would not have the level of motivation I do now to attack my PhD studies.

409 Louis Billera, Department of Mathematics, Cornell University

I was an organizer of the late summer workshop on Combinatorial Hopf Algebras. As I recall, the organizational aspects of this meeting went quite easily, thanks to the BIRS staff. But I don't want to talk about this.

As a result of this meeting, I was able to restart a collaboration with a colleague living on the other side of the continent. Due to discussions started that week in Banff, we are now in the midst of an exciting new direction in our research.

I've been to many research institutes over my long career. Yours now competes with my usual favorite (Oberwolfach) for top billing.

Good luck with the renewal process.

410 Marjorie Senechal, Louise Wolff Kahn Professor in Mathematics and History of Science and Technology, Director, Kahn Liberal Arts Institute Smith College

I'm sorry to have taken so long to reply. I have enormous admiration for BIRS and everything about it – its leadership, programming, staff, and of course its setting. But I haven't had time (and still don't) to write the letter I would wish to write to express this.

With Chandler Davis, I co-organized two workshops on creative writing in mathematics. Participants included mathematicians who write poetry, fiction, drama, biography, and nonfiction about mathematical themes, and writers who treat mathematical ideas in their work. Our common goal was to find creative ways to reach a broad public that is excited by mathematical ideas but finds them too often inaccessible.

Our sessions included reading and critiquing works in progress, discussing meta-themes (the relations between mathematics and literature), related themes (mathematics and visualization), and broader discussions of audience and outlets.

This experience has helped me not only as a writer, but as a mathematician: writing for a nonspecialist audience pressed me to carve new paths through the thickets of mathematical ideas to find, and find ways to express, their underlying simplicity. In the process I discovered open problems that have engaged me ever since.

These workshops were intended, from the start, not only to benefit the participants individually, but also to forge ties between BIRS and the Banff Centre. I am very pleased that our second workshop interacted on several levels with a concurrent workshop in the Banff Writing and Publishing program. We are planning to compile and edit an anthology of creative writing in the near future.

To say I am very grateful to BIRS is an understatement.

411 Serban T. Belinschi, Indiana University

I have participated in the Free Probability Theory workshop, October 9-14. Being in the process of writing my PhD dissertation, I found very useful to have the opportunity to see the leading research directions in my field, and I have had the opportunity to improve one of my results which will be part of my thesis. (if you would like more details, please let me know) I can also say that I found the organization to be great, and the place is perfect for conferences and workshops. I hope it helps.

412 Riccardo March, Istituto per le Applicazioni del Calcolo, CNR Research Institutes

I have participated in the BIRS workshop Mathematical Image Analysis and Processing, October 23-28, 2004, at the Banff International Research Station. I gave a talk in the workshop. The workshop gave me the opportunity to exchange ideas and have new contacts. As a consequence of these exchanges, during the workshop I started a new cooperation with one of the organizers (S. Esedoglu, UCLA) and another researcher participating in the workshop (R. Tsai, Univ. Texas, Austin). We are now working together on a common project about a variational method for image segmentation, and I think that we'll be able to write a new paper in the course of the next year. Without participating in the workshop this new work wouldn't have been started. I hope that such an information could help.

413 Oliver Dorn, Departamento de Matematicas, UC3M Avenida de la Universidad

I wanted to send you my report supporting the BIRS renewal before Dec 15 (as you suggested), but I am caught at the moment in a lengthy project report for a European project which I have to submit before the end of this week...

Will it be sufficient for you if I send you my report for BIRS during this weekend (Dec 20)? I want to give it some thoughts during the writing such that it is useful for you... I apologize for the delay....

414 Nages Shanmugalingam, Department of Mathematical Sciences, University of Cincinnati

In July 2003 I participated in a five-day workshop titled "Analysis and Geometric Measure Theory" at BIRS, and I found the workshop to be useful, both in terms of gaining new contacts and in terms of research. During the workshop I heard excellent lectures by Valantino Magnani and Raul Serapioni on

geometric measure theory in Carnot groups. Their talk spawned more questions related to a joint project I was (and am still) involved in with Pekka Koskela (another participant at this workshop). Thus this workshop has enhanced the research project I was working on with Pekka Koskela during and after the workshop, and in addition has given me an opportunity to meet the other researchers in the field I would not have met otherwise (such as Serapioni and Magnani).

I am grateful to BIRS for hosting this five-day workshop, and I hope that the center will continue hosting many more such excellent workshops in the future.

415 Cristian Ivanescu, Department of Mathematics, University of Toronto.

This year I had the wonderful opportunity to participate into the workshop organized by BIRS, namely "The structure of amenable systems".

I have found this workshop extremely well organized and extremely useful for my research endeavours. The topics of the lectures have helped me to gain a new and a cleaner prospective on the subject of my thesis. Now I can can provide applications to the dynamical systems that I studied and I classified in my thesis.

I have found enjoyable the encouragement of the organizers towards young researchers. It pleased me to meet former colleagues from the graduate school and to hear about their new results.

I think BIRS is an excellent institute in the service of scientific community.

416 Ana Savu,Postdoctoral Fellow, Queen's University

This year I had the wonderful opportunity to participate into two workshops organized by BIRS, namely Free probability theory and The structure of amenable systems. I have found both workshops extremely well organized and extremely useful for my research endeavours. As a recent Ph.D. graduate that is planning to engage onto a new research program, I have found particularly useful my participation in the workshop Free probability theory. This way I could meet the researchers working in this new and exciting area. Also I became aware in just five days of the major questions in the field and I left with a new project in mind to work on. I have also found extremely beneficial the second workshop that I participated in, The structure of amenable systems. The topics of the lectures have helped me to gain a new and a cleaner prospective on the subject of my thesis. Now I can employ the theory and the tools developed by people working on this area to get a better insight onto the dynamical system that I studied in my thesis. I have found enjoyable the encouragement of the organizers towards young researchers. It pleased me to meet former colleagues from the graduate school and to hear about their new results.

I think BIRS is an excellent institute in the service of the scientific community.

417 William F. Fagan, Dept. of Biology, University of Maryland

I thought you might be interested in knowing about a recent excellent conference I attended at the Banff International Research Station. Mark Lewis, Mark Kot, and Pauline van den Driessche recently organized a conference "Mathematical Models for Biological Invasions" held at BIRS. I am not exaggerating when I say this was the best research conference I have been to in 10 years as a faculty member, and this includes two excellent Gordon conferences. I really enjoyed getting to meet, or meet again, with so many excellent researchers, and the arrangement of the meeting, with so much free time for working on projects or sharing ideas was great. It was truly an invigorating meeting. My head is overflowing with ideas stemming from all the excellent discussions and I'm looking forward to starting some new collaborations as a result.

It was particularly valuable for me, as a quantitative biologist, to interact with "pure" mathematicians and a wide variety of researchers with diverse research expertise, yet all connected through a shared interest in invasion dynamics.

I sincerely appreciate the invitation and the opportunity to share the research I've been involved in.

418 Christiane Tretter, Fach Mathematik, Universit?t Bremen

It is a pleasure for me to confirm how inspiring and fruitful my participation in a BIRS workshop was!

The setting of BIRS is ideal for meeting and discussing with colleagues from all over the world. The facilities (meeting rooms, internet access in all rooms) are very good. Personally, I had the chance to get to know a colleague working on a similar area for the first time at the BIRS workshop. Moreover, work on a joint manuscript made good progress during my visit in Banff. The remote atmosphere (not to mention the spectacular scenery) away from every day's business creates a particularly good ground for mathematical ideas and creative thinking.

All in all, following my short visit to BIRS (it was a two days workshop only) I would like to participate in a longer workshop in the future and, if it would be possible, I would like to apply for a longer period of staying at BIRS to collaborate with two or three colleagues on a particular project.

I wish you good luck in realizing your future plans for BIRS!

419 Matthew Johnson, London School of Economics

I am writing to you concerning the Banff International Research Station. In August 2004, I attended a short workshop at BIRS on Combinatorial and Algorithmic Aspects of Networking and the Internet.

The workshop played a very important role in the evolution of my research interests. I obtained my PhD in pure mathematics just a couple of years ago and have since become increasingly interested in potential applications of my work. The Banff meeting made me realise there is a wealth of research that I was not previously aware of and both the papers I have discovered and the contacts I made have contributed to my recent research.

I believe BIRS is an invaluable asset to the international mathematical research community and look forward to future opportunities to participate in its continuing success.

420 Agnes Tourin, Department of Mathematics, McMaster University

I participated in the workshop on Semimartingale Theory and practice last June (June 2004). I met for the first time two researchers from Princeton University I started to discuss and collaborate with, namely P. Cheridito and V. Henderson. This already gave rise to an article submitted in November 2004 to IJTAF (International Journal of Theoretical and Applied Finance).

421 Marie Jose Bertin, Professor at the University Paris 6

I have been invited twice at BIRS during the year 2003. The first time, it was for the Mahler Measure meeting. This gave me a great opportunity for meeting many mathematicians and young researchers in various domains. In particular, I met Lewis who was interested by my talk at the interface of Number Theory and Algebraic Geometry. So Lewis invited me to the Calabi-Yau meeting. For me, it was an extreme chance to meet top-specialists of a domain different from my own. So the Banff meetings gave us a strong impulse and now the French mathematicians are going to organize a second meeting Mahler Measure II at the CIRM in Luminy, in June 2005. Another consequence of the second Banff meeting: I have been encouraged to submit a paper on the results exposed in Banff. I hope that my own experience will show the importance of BIRS for the mathematical community.

422 Frank Sottile, Associate Professor, Department of Mathematics, Texas A&M University

I have been a participant at three conferences at BIRS, twice as a participant and once as an organizer. I also just had a proposal for a workshop accepted for the 2006 year. Let me first say that BIRS is one of the best things to happen to the North American Mathematical community in recent years. Within a few months of its opening, word had spread about the high scientific level of the meetings, the excellent facilities, and how wonderful it was to go there.

Now when discussion comes around to organizing a high-level meeting on a focussed research topic, BIRS is one of the first places to be mentioned, and the one where everyone would like to go. [I have been involved in at least a half-dozen such conversations, and have thrice acted on that impulse.] BIRS gives North American Mathematicians a home for intense, revitalizing, and inspiring meetings. Invitations to conferences at BIRS are coveted at least as high as

invitations to Oberwolfach, and many Europeans are aware of the excellent BIRS facilities and interesting meetings that are held there.

One quip of a fellow participant at my first meeting captures some of its value to the mathematical community: "The Banff Institute is inspiring—you are inspired to go home and prove wonderful theorems so that you are invited back".

One of my papers came out of my second BIRS meeting. During a talk by Anders Buch, I realized that an old result of mine would have something to say about quiver polynomials. Buch and I discussed this, and the result is a joint paper (also with Alex Yong) "Quiver coefficients are Schubert Structure constants" math.CO/0311390.

At that meeting and the others I have attended, was able to do some key work with coauthors on other projects.

Currently, I have several (3) research projects that arose from discussions at a workshop I helped organize in August 2004.

I do hope that BIRS continues, and even increases its funding. I think that it is having a big impact on the North American research community, and its international stature is high and rising fast.

423 Raphael Rouquier, Directeur de l'equipe Geometrie et Representations, Institut de Mathematiques de Jussieu et UFR de Mathematiques, Universite Denis Diderot

I have taken part in two 5-days programs organized at BIRS, one in 2003 and one in 2004.

During the 2003 workshop "Current Trends in Representation Theory of Finite Groups", discussions with Joe Chuang led to the discovery of a very simple pattern underlying a number of constructions. We realized that in many examples, derived equivalences between blocks where filtered versions of Morita equivalences. This is strikingly similar to the construction of perverse sheaves and is closely related to the spaces of stability conditions for D-branes discovered by string physicists. This was actually reported in a talk given during that same week. A paper is in preparation on the subject. This workshop also gave the opportunity to clarify the status of certain finiteness problems (Donovan and Puig conjecture) about representations of general linear groups, through discussions with Radha Kessar.

During the 2004 workshop "Interaction of Finite Dimensional Algebras with other areas of Mathematics", I have noticed for the first time a number of talks taking an emerging viewpoint of "categorifications". I believe this to be a genuine change of paradigm in representation theory and algebraic geometry and I found it very inspiring.

The BIRS offers unique facilities for research and interactions between participants. The internet access in the conference room gave me the possibility to find answers to questions raised during a talk before the talk was over, allowing for fruitful exchanges. I am familiar with a number of mathematics conference centers around the world: MSRI, Berkeley, Newton Institute, Cambridge, ICMS, Edinburgh, MFO, Oberwolfach, CIRM, Luminy. None of them combines the remarkable features of BIRS, which provides such fertile grounds for scientific exchanges: geographical location, very quiet and inspiring; very good accommodation and eating facilities; extremely efficient staff; very well equipped conference room.

424 Albert Goldbeter, Professor of Theoretical Biology, Faculte des Sciences, Universite Libre de Bruxelles

I would like to stress how useful and enjoyable was my participation in the workshop "The legacy of Lee Segel" organized in July 2002 by L. Edeltein-Keshet and M. Lewis at the Banff International Research Station.

This meeting brought together some of the best researchers in the field of Mathematical Biology. It also provided a unique opportunity to meet with the new generation of mathematical biologists who have recently moved to various universities in Canada.

The meeting was a source of inspiration for all the participants. The talks were excellent, and the ensuing discussions were thorough and fruitful.

In my view the BIRS represents an ideal place for holding scientific meetings in the various fields of mathematics. I deeply regret that, due to other obligations, I was not able to take part in August 2004 in another Mathematical Biology workshop organized at BIRS.

What is particularly enticing about the meetings organized at BIRS is that they allow for new, fruitful contacts between participants, who have sufficient time to meet, to discuss, and to know each other better.

I hope you will be able to continue this series of extremely fruitful meetings in this unique environment, which is truly exceptional both from a natural and intellectual point of view.

425 Jennifer Bryan, Assistant Professor, Department of Statistics and the Michael Smith Laboratories, University of British Columbia

I was an organizer of a 5 day workshop at BIRS in August 2004, entitled "Statistical Science for Genome Biology". This workshop was a tremendous success and a substantial amount of credit goes to the excellent staff and infrastructure provided by BIRS. To my knowledge, there is no other mechanism (at least available to a PI here in Canada), whereby one can organize such a scientifically valuable gathering with such a small amount of administrative effort.

More importantly, the BIRS 5-day workshop program allowed my co-organizers and I to bring together a very diverse group of statisticians, analytically-oriented biologists, and experts in statistical computing to discuss computational problems in genomics. It is rare that this mix of people gather at a conference and, even then, we must often make do with one or two sessions devoted to "statistics in genomics".

It is my sincere hope that the many agencies supporting BIRS will continue to do so well into the future.

426 Michael Mossinghoff, Department of Mathematics, Davidson College

I have attended two conferences at BIRS (both were five-day workshops) in the last two years: "The Many Aspects of Mahler's Measure" in April 2003, and "Explicit Methods in Number Theory" in November 2004. Both were very stimulating meetings, and both helped to further my research.

One paper grew directly out of my participation at the first meeting. That paper is "Lehmer's problem for polynomials with odd coefficients", joint work with two others who were present at that meeting: Peter Borwein and Edward Dobrowolski. It is presently under submission.

The second meeting was also quite helpful for my current research. I am presently working on some problems regarding the expected value of L_p- norms and Mahler's measure for certain classes of polynomials. Another participant's presentation at that meeting led me to realize that the same methods of my current research lend themselves to solve similar problems for another interesting class of polynomials, so I plan to expand my paper to cover this. This is still under development, but I plan to finish the article in early 2005.

Many thanks to you and the rest of the BIRS staff for making BIRS such a terrific place for mathematics meetings.

427 SungSoon KIM, Maitre de Conferences a l'UPJV, LAMFA, fac. de mathematiques

My name is SungSoon KIM, a professor at the University of Amiens, France, who participated a conference in October 2003. The subject was on the current trends in representation theory of finite groups invited by Prof. Gerald Cliff.

There I could meet Prof. Ariki, Mathas, and Shoji with whom I wanted to meet them all to discuss on my research problem and it was very helpful to understand more deeply where I had to look on. The result of Leclerc and Miyachi on the constructible characters are directly related to my main research problem now : I'm trying to apply their theorem on Weyl groups of type B_n and D_n to the complex reflection groups $G(e, 1, r)$ and $G(e, e, r)$ respectively. This topic is having more important meaning in the sense that the Kazhdan-Lusztig cell theory which was for the Weyl groups associated to finite reductive groups can be extended to the complex reflection groups, especially searching for Spets – the analogous of reductive groups over a finite field for the reflection groups.

All the participants were the topmost level on this subject, that is modular representation theory, whom I used to meet in all the nice conferences at Europe, US, and Japan. It's always fruitful to discuss with

them, meeting at one place together!!

It was a very nice and unique experience at Canada (yes, it was my first visit to Canada as a scholar) and I was fully satisfied with the organization, particularly I appreciate Prof. Cliff's care for many many things for all the participants.

I'll be very happy to be invited again, discussing my works with all of them again!! It will be wonderful! Also, all the other equipments, esp. food and sport-center, were very satisfactory, not to mention the nature itself around the Banff center. What a gifted place!!!

428 Peter Pivovarov, Department of Mathematical and Statistical Sciences, University of Alberta

I am currently in my second year of the Master's program at the University of Alberta. I attended the Convex Geometric Analysis Conference at BIRS from July 10th until July 15th, 2004. My attendance of this conference has proven to be tremendously beneficial as it has directly shaped my plans for future study.

Prior to the conference I was unsure of what direction to pursue for my Ph.D, which I plan to start in the coming fall. I was unaware of the connections with areas that relate to my current specialization and the many possibilities for future research. The themes that were presented indicated these various directions. I feel that I now have a better understanding of what shape future research will take and what to focus on in order to better prepare myself for my Ph.D. program.

In addition to making my decision for future study easier, my attendance helped me to develop my intuition in my current specialization. I am more comfortable with some of the methods and tools used and I am more familiar with various types of arguments. My participation also injected some enthusiasm into my current research and provided a great deal of motivation.

Attending the conference at BIRS was definitely the highlight of my summer and I believe that the benefits to graduate students from attending a program at BIRS would be difficult to overstate.

429 Thomas Lemieux, Professor and Distinguished University Scholar, Department of Economics, University of British Columbia

I participated to two workshops (that I also co-organized) at BIRS. The first (2 days) workshop was held in May 2003 on the theme of the regression discontinuity method in economics. I truly got a lot out of this workshop which gave me a chance to interact with the very best people working on this issue. This inspired me in my own research and I have completed a research paper inspiring by the workshop. I am also finishing up co-editing a special issue of a journal (The Journal of Econometrics) that mostly consist of papers that were presented at the BIRS workshop. The other co-editor, Guido Imbens from UC Berkeley, was also a participant at the workshop. We would not have undertaken this project if it had not been of the opportunities provided by BIRS.

The second workshop I participated to (as a co-organizer once again) was held in April 2004 on the theme of the Microeconometrics of Spatial and Grouped Data. This workshop was also a big success. As a participant, it gave me the opportunity to get exposed to the best research in the area. I have now started a new research project inspired by some exchanges I had during the workshop.

I should also say that I have heard nothing but enthousiastic comments from other workshop participants. Several people have asked me when there would be another meeting at BIRS. Others liked so much their experiences that they are trying to organize future meetings at BIRS themselves.

BIRS is already a jewel for the scientific community here in Canada. My own research has benefited tremendously from BIRS. I sincerely hope that BIRS will be renewed with an expanded mandate for the years to come.

430 Stu Whittington, University of Toronto

I was an organiser of a BIRS workshop in 2003 on Statistical Mechanics of Polymer Models. This workshop focussed on three aspects of the subject and brought together people from the mathematical physics and combinatorial mathematics communities who had similar interests (in terms of problems) but

who used very different techniques. In addition people from algebraic topology, especially knot theory, were invited and attended the workshop. The workshop was an opportunity for people from these different communities to meet and to learn about problems and techniques in the different areas. In my view it was a great success. Several people have commented on how useful they found the workshop and have asked when a similar workshop will be organised in the future. I know that many research contacts were made at the workshop. Partly as a result of this workshop I turned my attention to combinatorial models which are exactly solvable and this has evolved into an active collaboration with three Australian mathematicians (Aleks Owczarek, Richard Brak and Andrew Rechnitzer) who were present. Although I knew all three people before the workshop, the week at BIRS was partly responsible for the collaborative work which ensued.

431 Zinovy Reichstein, Department of Mathematics, University of British Columbia

It may be worthwhile to mention in the proposal that Vladimir Voevodsky announced his proof of the Bloch-Kato conjecture at the workshop on Quadratic forms, algebraic groups, and Galois cohomology held in October 4 - 9, 2003. This important result extends Voevodsky's work on Milnor's conjecture for which he won a Fields medal in 2002. The Institute of Advanced Study in Princeton is now running a year long program devoted to the Bloch-Kato conjecture.

432 Vladimir Troitsky, Department of Mathematics, University of Alberta

In March 2003 I participated in Northwest Functional Analysis Symposium, that was held in BIRS as a two-day workshop. I found that experience very helpful. At that time I was a postdoc at the University of Alberta and a newcomer to Canada. The workshop gave me an opportunity to meet a lot of functional analysts, in particular those working in western Canada and western United States. In a way, it helped me in becoming a part of the "local" Functional Analysis group. It also was an opportunity for me to introduce my research to this group. I am going to participate in the Second Northwest Functional Analysis Symposium in BIRS in 2005.

My mathematical interests include order structures in Functional analysis. There are biannual "Positivity" meetings (conferences) devoted to this area of research. These meetings have been previously held in various countries. There is now an ongoing discussion among researches in this area about possible places for the 2007 Positivity meeting, and BIRS is being considered as one of the preferred options. We think that the meeting could be organized as a BIRS 5-day workshop. We intend to apply for the spot in BIRS 2007 schedule in early fall of 2005. If our application is approved, I will likely be one of the organizers of the meeting. This underlines that BIRS a most useful resource for my research and collaboration.

433 Virginie Charette, University of Manitoba

I was a co-organizer of the workshop "New techniques in Lorentz manifolds", held November 6–11, 2004. There were participants – including post-docs and graduate students – from Canada, the US, Europe and Asia. I hope I can express in a few words how stimulating it was. We have few opportunities to work so closely with a large number of experts in our field, let alone with such a beautiful backdrop! I am certain the allure of the Rockies had much to do with attracting people from so far away, in November.

Progress was made on some key problems in the field during the workshop, and it was a springboard for new collaborations. Many participants expressed the wish to see another such workshop organized!

On the organizational side, Andrea Lundquist (the on-site manager) was perfect, the computer system enviable, the food was great, the accommodations comfortable. Traveling with an infant myself, which is always a big production, I found everyone helpful.

I am looking forward to returning to BIRS.

434 Sinan Gunturk, Department of Mathematics, Courant Institute of Mathematical Sciences

I apologize for the delay in getting back to your message and hope this note will reach you on time to have a chance to be useful for the purposes you mentioned in your email.

I have now participated in two workshops at the BIRS; one in each of 2003 and 2004. Namely, these workshops were

Applicable Harmonic Analysis, June 07-12, 2003 (03w5019) Mathematical Image Analysis and Processing, October 23-28, 2004 (04w5512)

Both of these events have been very fruitful and enjoyable for me. I have certainly made several new contacts (especially in this year's workshop) and been exposed to exciting research problems. The atmosphere was always wonderful and so were the staff members and the facilities.

Actually I have been so happy with my visits that together with some colleagues, we applied to organize a 5-day workshop in 2006. I was thrilled when we received an email two days ago from Professor Ghoussoub that this proposal has been accepted. I am so excited to be given this wonderful opportunity.

I can go on for much longer, but perhaps a short note is preferable.

435 Marshall Hampton, Department of Mathematics, University of Minnesota

I participated in the Celestial Mechanics workshop in April 2004. This was a wonderful workshop and I found it extremely interesting. In particular, I enjoyed interacting with some ceramic artists at the Banff center. They helped me make some porcelain models of polyhedra relevant to my talk which I have found useful in subsequent talks as well. I cannot imagine such a collaboration happening anywhere but at BIRS. In addition, the talks and conversations with several participants have been very helpful in other aspects of my research. Overall, there are only one or two other conferences that I have ever attended which were as useful and of such high quality.

436 Almut Burchard, University of Virginia

please forgive my late reply. I just want to send you a short note how much I appreciated being able to participate in the five-day workshop "New developments on variational methods and their applications" last May at the Banff International Research Station.

I thought that the talks were generally excellent, and the open schedule offered many opportunities for discussion. I particularly liked some of the broader talks on Ginzburg-Landau equations, and the few talks that did not exactly fit into the three main directions of the meeting (your talk on inequalities involving mixed derivatives, Nassif Ghoussoub's talk on non-convex optimization, and Sergei Bolotin's talk on the three-body problem).

The workshop also provided a unique opportunity to meet younger Mathematicians, and I was very grateful that my visiting post-doc (Hichem Hajaiej) was invited to the workshop as well. Finally, the workshop allowed me to discuss some of my recent work, which is too specialized for a Colloquium talk, but which turned out to be of interest to this community.

BIRS is an outstanding place for a Mathematics meeting; offering all desirable tools while minimizing distractions. Andrea Lundquist provided excellent support. My only regret was that I could not stay for a longer period.

437 Erik Winfree, CALTECH

The BIRS workshop "Dynamics, control and computation in biochemical networks" was really excellent. As one of the (less active) organizers, it's no surprise that I feel that the selection of topics was ideal. However, what I can say of greater substance is that a conversation during the workshop has sparked a new direction of research in collaboration with another attendee, physicist Bernard Yurke. The discussion in presentations about stochasticity in biochemical networks lead to discussion during hikes, which lead to equations, which lead to new simulations... and hopefully, we're on our way to something interesting. BIRS is a really wonderful environment.

438 Dejan Slepcev, Department of Mathematics, University of California-Los Angeles

I am sorry that I was unable to write to you prior to December 15. but I hope that my testimony will still of use to you. I very much hope that you will be successful in securing the desired funding for BIRS and wish you luck in that endeavour.

I participated in the workshop on "Nonlinear dynamics of thin films and fluid interfaces" from Nov. 29 to Dec 04, 2003.

First of all, I would like to mention that the workshop was able to attract a great number of researchers working on thin films. It was more focused than most of the conferences. At the same time there were researchers from a variety of viewpoints and backgrounds, from ones doing experiments (with real fluids) to mathematical analysts (like myself).

Both the setting and the time frame of the workshop were conducive to frequent and lengthy mathematical discussions.

As a young researcher (I was a postdoc at the University of Toronto at the time) I got an opportunity to meet the leading researchers in the field and discuss with them several interesting problems.

In particular Tom Witelski from Duke University had been previously working on a problem similar to one I was working working on. His comments on my work gave me a lot of encouragement to continue. A part of that work is a preprint with Mary Pugh: "Selfsimilar blowup of long-wave unstable thin-film equations" available on my web-page: http://www.math.ucla.edu/ slepcev/ Two other works on the problem are in preparation.

Furthermore I had an opportunity to meet a number of researchers from Europe, and discuss with them several problems of interest. Among them are: Mark Bowen, Lorenzo Giacomelli, Gunter Grun, John King, and Sandra Wieland. Hearing their distinct viewpoint has been inspiring. It also resulted in an ongoing scientific exchange. In particular I visited University of Bonn this year where I had discussions with Prof. Grun and next year I an participating in a minisymposium at Equadiff organized by Prof. Giacomelli.

In conclusion, participating at the workshop has been a great experience for me and I am looking forward to future BIRS workshops.

439 Marco Abate, Dipartimento di Matematica, Universita di Pisa

I had the opportunity of participating to two workshop at BIRS, on creative mathematical writing. I found both workshops extremely stimulating, both for the people I met there and for the work I was able to do because of the inputs I got at the workshops.

The setting and the organization are among the best and most suitable to writing and research in and about mathematics I've ever encountered around the world. I would have said that even for purely mathematical workshops; but this is particularly true for the workshops I attended, because the possibility of interaction with non-mathematical writers and writing activities at BIRS made the overall experience even more fruitful.

Summing up, I very heartily hope that the collaboration between BIRS and PIMS will continue and grow.

440 Tai-Peng Tsai, Department of Mathematics, University of British Columbia

Here is a description of my experience in BIRS. I am sorry for late reply due to final exam and the appointment committee.

Kenji Nakanishi, Stephen Gustafson and I formed a Research In Teams group and visited BIRS during April 18-26, 2003. Both Stephen are I were from UBC. Kenji was visiting Princeton from Japan. After the BIRS visit Kenji stayed in Vancouver for another 10 days.

I found BIRS a unique place where I could forget about the final exam, etc., and focus on mathematics. Its effect is enormous. I also thought it helped to attract talented mathematicians like Kenji to visit us for a longer period of time. A direct result of this experience is the joint paper,

Asymptotic stability and completeness in the energy space for nonlinear Schrödinger equations with small solitary waves, Int. Math. Res. Not., 2004 (2004) no.66, 3559–3584.

Moreover, it also initiated three joint projects for which we are writing up papers.

From my point of view, BIRS should operate yearlong as long as the traffic permits. In fact, I applied

to the Research In Team program again (with a different team) for the past summer and was declined due to limited space. It would be great if there is an alternative at a less busy season.

441 Robert Rumely, Department of Mathematics, University of Georgia

I attended the BIRS meeting on pluripotential theory and its applications in September 2004. It was a very useful meeting for me. For a long time I have worked in an area (arithmetic intersection theory) tangential to Pluripotential theory, but I had never before had an opportunity to talk to the people whose papers I had been reading, or to present my work to them. I am grateful for the contacts established. Here is a concrete example of the benefits of the interaction at BIRS. In one of my lectures I noted a formula for the higher-dimensional transfinite diameter, analogous to the classical Robin formula in one dimension, which can be established using arithmetic intersection theory. It turned out that such a formula was new to pluripotential theorists. On the other hand, I had not known it would be of interest, and had never written it up. The response at the meeting encouraged me to do so.

442 Matthias Steinmetz, Director and Scientific Chairman, Astrophysical Institute Potsdam (AIP)

I visited the Banff International Research Station (BIRS) in November 2003. Even though my stay war brief, I profited considerably from the center, as it provided the facilities to intensely interact with many of my colleagues undisturbed from the tasks of daily routine. Science is more and more developing in a joint international endeavor, and places like BIRS where people can get together in order to brain storm about a key science questions. Together with Aspen (US) and Ringberg Castle (Germany), BIRS is thus one of the few jewels in the international science infrastructure whose value to 21 century science can hardly be overestimated. I strongly support your request for renewed funding

443 Frank Hoppensteadt, Research Professor of Mathematics, Courant Institute of Mathematical Sciences, Sr. Vice Provost, New York University

I participated in a week-long meeting on mathematical biology in summer 2003. I attended the talks and gave one myself. I found the format to be very convenient - not too many talks and plenty of time to discuss things. The audience was very good, especially the young people. Many of them I have met in the time since that meeting.

I compare the BIRS program favorably with respect to Oberwolfach. I have attended Oberwolfach meetings regularly since 1971, and I like that venue very much.

Major advantages that Oberwolfach has are the library, which is outstanding, the music facilities (piano and sheet music), the isolation, and the computing facilities. I think the rooms are more comfortable than BIRS.

Hiking is available in both. Travel complexity is comparable in both - for Oberwolfach I fly to Frankfurt and train/taxi to the conference center; for BIRS I flew to Calgary and rented a car. I usually arrange associated visits in Europe each trip, but did not arrange associated visits in the Northwest.

Major advantages that BIRS has: the pool and 'spa', the town of Banff and its restaurants and stores (in particular, the lack of isolation), the arts/music programs, and being the gateway to the Rockies. The food is better at BIRS.

I found the meeting I attended to be very useful, especially as a venue to see what young researchers are interested in.

I hope these remarks are helpful.

444 Ileana Streinu, Professor of Computer Science, Smith College

I'd like to express my gratitude to PIMS for hosting one of the most exciting inter-disciplinary events I have ever attended - the Summer 2004 Workshop on Protein Flexibility, organized by Walter Whiteley (York University, Toronto) together with Leslie Kuhn and Mike Thorpe (Michigan).

The Banff Center was an extraordinary venue for

interaction and communication between participants during the workshop - the perfect setting, in the league of the famous European centers at Oberwolfach (Germany) and Luminy (France) for mathematical meetings. It fostered collaborations and triggered many interesting open questions on which the participants worked during and after the workshop. As a result, I just submitted a few days ago a paper, where I am acknowledging the Banff Workshop on Protein Flexibility and its organizers. You can find it at:

http://ce.smith.edu/ streinu/Research/KTree/

I hope that BIRS will continue to organize events of this high scientific caliber, and that its funding will be renewed.

445 William Goldman, Professor, Department of Mathematics, University of Maryland

I attended (and co-organized) a BIRS workshop in November 2004. This workshop brought together researchers in Lorentzian geometry from all over the world, in several different fields of mathematics and physics (topology, discrete groups, differential geometry, general relativity, cosmology). In just a half week, we had explored several areas of new research and begun new dialogues about the subject. The congenial and inspiring atmosphere of BIRS, together with a supportive and competent staff, facilitated the successful interaction. We are planning to publish a special issue of a journal based on the workshop, and many of the participants are continuing to correspond with each other after the conference. It was a highly successful and stimulating experience, which we hope to repeat in the future.

446 Joshua Cooper, Courant Institute of Mathematical Sciences, New York University

My experience at the Banff Center, during the BIRS "Generalizations of de Bruijn Cycles and Gray Codes" this past December was a memorable and extremely pleasant one. I encountered seventeen researchers I had never met before, several of whom are now likely future coauthors. I started work on a few projects while in Banff: one on my own, one with a former coauthor, and one with a new coauthor. The material the presenters spoke about was stimulating and diverse, and the facilities were absolutely wonderful. The rooms were large, clean, and had high-speed internet connections. The available food and coffee was very high-quality and the staff was helpful whenever I needed it. The site was gorgeous, being in the midst of the Canadian Rockies, and afforded several opportunities for day-excursions during my stay.

I can confidently say that this was my best conference-attending experience to date, and I highly recommend its future support and expansion. I only hope that I can return to Banff for another workshop in the near future.

447 Brian Greene, Professor of Physics and Professor of Mathematics, Columbia University

The Banff International Research Station has played a vital role in my own research career and also that of many other theoretical physicists. I participated in my first Banff program while a postdoctoral fellow at Harvard in the 1980s, and through an intensive series of lectures and vibrant all-day discussions at the center, I found new and important directions for research that in many ways I am still pursuing today. Since that first visit to the Banff Center, I have participated in two other meetings, both of which were exciting and influential. The most recent of the two was last spring when I help to co-organize a meeting on String Theory and Cosmology. The center provided an ideal forum for researchers from a wide variety of disciplines to come together to address research issues that no field can successfully handle in isolation. Many of the attendees commented that it was one of the most useful meetings in the last few years. I personally learned a great deal and am vigorously pursuing particular problems (Transplanckian physics, High Scale SUSY breaking, Cosmological Evolutions of Extra Dimensional theories) that were raised and discussed during the program. I would whole heartedly recommend renewing and, if possible, extending the Banff Center's programs.

448 Karsten Grove, Department of Mathematics, University of Maryland

I am sorry for being so swamped with work that I have not yet responded to your request. even now, I do not have the time that a respond deserves.

This spring, I and my two collaborators Wilking and Ziller spent two weeks in your research in teams program. The problem we tackled is not a problem for one person, it is simply too big. This is also why we can only hope to solve it eventually if we will have more opportunities like the one we had at BIRS.

Before meeting at BIRS, we had essentially classified all manifolds of positive curvature having an isometry group with orbits of codimension one (we are currently writing this part up). Our classification left open one isolated example and two infinite families of manifolds all of dimension 7 that potentially will carry such metrics as well. To construct such metrics would have tremendous impact on the field. So this is the task we focussed on most at BIRS.

We would not have the insight we have now without these two weeks. Although it is not at all clear yet which strategy will work, we know what not to try and have gained so much information that we are convinced that our candidates do indeed have the desired metrics. To succeed in this we realize that we need one, or possibly two more two week periods of hard work and brainstorming in an environment like the one at BIRS. We actually only know of one more such place, namely Oberwolfach in Germany. We would love to come back to BIRS some time in the near future to get another crack at the problem.

I am sorry for this informal response, but I seem to find it hard to find the time needed to do the things I love the most.

449 Sara van de Geer, Mathematical Institute, Universiteit Leiden

Maybe too late, but I still want to express my support for BIRS. I have attended the workshop "Regularization in Statistics" in September 2003. It was a great experience and since then many e-mails have been going back and forth between the participants, further discussing the findings. In particular, I would like to mention stimulating discussions with Robert Nowak from Rice University. The discussions resulted in a technical report by Scott and Nowak and a techincal report by Tarigan and me, both still in the submission stage. Also, my presence at BIRS leaded to an invitation to join an NSF panel.

450 Philip Maini, Department of Mathematics, University of Oxford

I have attend the inst at Oberwolfach in Germany on a number of occasions and thought it was excellent. However, it cannot really compare, in my opinion, with BIRS (except for library provision). I found BIRS to have excellent facilities and be in an excellent location. I would most certainly like to use it more often and would recommend it very highly to anyone who wishes to run a one-week program.

451 Joseph D. Fehribach, WPI Mathematical Sciences

I apologize for not being able to get back to you sooner, but maybe this will still help. I've only been to Banff once (Easter, 2003), but the workshop that I attended there was extremely helpful. I was able to discuss my work with several key people in the PEM fuel cell world, and also meet several others. This was surely important in getting at least one of my proposals funded. I very much hope to attend another Banff meeting future. Many thanks.

452 Charles K Chui, Stanford University

I am terribly sorry for missing the deadline for your request. I have been traveling out-of-the country for awhile. My experience with BIRS was excellent. It was academically stimulating and environmentally intoxicating. I would rate it among the best conference site and facility. I definitely would like to be back in the near future.

453 Dale Rolfsen, Professor of Mathematics, University of British Columbia

This letter is to describe some of my wonderful experiences with the Banff International Research Station. I have been involved in four separate BIRS 5-

day workshops, twice as co-organizer, and each workshop has been very useful in my research, sometimes in unexpected ways.

Because the workshops have been quite well-focussed, they really do generate intense collaboration and bring together researchers who can interact productively. This is in contrast with, say, the Oberwolfach model, which was one of the inspirations for BIRS, in which the week-long conferences tend to be of a more general nature. For example, an Oberwolfach meeting may be on "Topology" whereas a BIRS meeting would typically be entitled "Aspects of Mahler's measure," "Knots and their manifold stories" or "Braid groups and applications." My personal experience at Oberwolfach meeting has been that only a minority of the talks really have significance for my research, though certainly they do expose me to ideas in other areas. That is, it is a cultural experience more than a research experience. Meetings of mathematical societies or the International Congress of Mathematicians, while they may be pleasant social events and can be informative in many ways, likewise do not have the "research punch" that BIRS (and few other places, such as Luminy) provides.

At BIRS, people seem to be collected together because of a common research focus, and not necessarily the same category of mathematics. For example in the braid group conference there were topologists, specialists in group theory and people whose main interest is representation theory. We all worked on aspects of a single topic, and I feel that each of us left at the end of the week enriched in our research perspective. I certainly did.

Nearly everyone I have spoken to at the end of a BIRS workshop has said something like "This has been the best mathematics meeting I have ever attended." There is a real sense of excitement to such a well-focussed gathering of scientists, which is missing in a more diffuse, or shorter, or less intense gathering. Several people told me of specific ideas that developed as a result of the interaction at the BIRS workshop.

I would also like to relate a personal story, in which BIRS was instrumental in promoting my research, by bringing together the right people at the right time. At the meeting "Knots and their manifold stories" one of the participants was Peter Linnell, an analyst. Akbar Rhemtulla, of University of Alberta, visited the meeting for its last two days. Linnell and Rhemtulla both happen (like me) to be very interested in orderable groups, though for different reasons. In my case, it has to do with topological aspects. In particular, in studying fundamental groups of 3-manifolds which fibre over the circle, I needed a criterion stating when a surface group could be ordered by an ordering which is invariant under a given automorphism (the "monodromy"). I had a partial answer, but felt there should be a complete solution. The three of us kicked this problem around for several hours, after the regular lectures were finished, and eventually came to a complete solution to the problem, in subsequent email correspondence – it involved, of all things, Galois theory! It would never have occurred to me on my own. This is not the place to go into details, but I am grateful to BIRS for providing the setting, and mix of people, to advance my research in very concrete ways.

The setting of Banff, of course, is wonderful and indeed inspirational. I think the mountains and excellent facilities have subtle ways of causing participants to elevate their thoughts and stimulate their creative juices. I find the staff have always been very friendly and helpful in relieving the organizers of much of the burden often associated with scientific meetings.

I hope my comments are useful, and that they help convince the authorities and funding agencies that BIRS is a precious resource for the Canadian and world scientific community, which amply deserves continued support.

454 Hans Schneider, Mathematics Department, University of Wisconsin

I attended a BIRS workshop on Combinatorial Matrix Theory in May 2004 and found it extremely interesting with many excellent talks. It has influenced my subsequent research.

Thank you for organizing BIRS.

455 Tony Leggett, Department of Physics, University of Illinois at Urbana-Champaign

I was a participant in the BIRS workshop of April 2003 on Quantum Mechanics on the Macroscopic Scale,and I not only enjoyed it enormously but got a great deal out of it scientifically.In particular,I met a number of people I might not otherwise have had the chance to meet,such as Dr.Yevgeny Il'ichev,who is now working in Jena in Germany and whose experimental work intersects strongly with my theoretical

interests;we had a number of good discussions,and I have kept in touch with his work since the meeting.

456 Kayo Masuda, Mathematical Science II, Graduate school of Material Science, University of Hyogo, Japan

Upon your request, I would like to report the following developments in my research.

I stayed at BIRS this year during three weeks from July 24 to August 14 together with three other team participants. Since the accommodation is so nicely organized, I could concentrate myself solely to the research. As a result, I completed two articles, one with other participants and another by myself. The second one concerns with equivariant endomorphisms of algebraic varieties with algebraic group actions and has been submitted to the proceedings of AMS for publication.

Speaking the environments of the BIRS, I think that everyone praises the beautiful scenery of the Rockey Mountains, but I would like to mention of the food provided at the canteen which is so natural and healthy. I have been refreshed physically.

457 Amy Novick-Cohen, Department of Mathematics, Technion-IIT, Israel

I attended a meeting on thin films and fluid interfaces in Banff at the BIRS center which was held Nov 29-Dec. 4. First of all I found the facilities to be excellent and the access to the center from the airport to be unproblematic even in mid-winter. The breakfast and tea facilities promoted discussion among participants at all hours of the day, as did the sports facilities, which I appreciated very much.

During the conference, I had extended discussion with many people which I'd met on previous occasions: Grun, King, Pugh, Giacomelli, but I also had the opportunity to converse with others essentially for the first time, including Bernoff, Shearer, Wetton, Howard, Behringer, Fontelos, Munch and Wagner. Though I can not yet claim that new collaborations and papers have arisen from the meeting, I remain in contact with numerous participants, and future collaborations may be in the making once some backlog in previous obligations gets a bit out of the way.

458 Jianhong Wu, Professor, Canada Research Chair in Applied Mathematics (Tier I)

I am writing in my strongest support for the renewal of BIRS.

Firs of all, I am writing in the capacity of the Chair of two very successful Programs on mathematical modeling in infectious diseases held in BIRS in 2003 and 2004. The first program was held in September of 2003, it was one of the very few international events dedicated to the timely gathering of international experts and Canadian researchers on SARS modeling and analysis. This event, sponsored jointly by Health Canada, MITACS and PIMS, represented the highest level of scientific discussions that led to a five page summary of problems requiring immediate attention of Canadian modelers, and it was one of the sources of inspiration of several high impact articles published by the Canadian team (one was being highlighted in the web page of Proceedings of Royal Society of London). I must say that it was due to the great vision and leadership of BIRS, MITACS and PIMS that such an event could be put together on a very short notice, and BIRS provides the best support and facility.

The directors of MITACS (DR. Gupta) and PIMS (Dr. Ekeland) attended the event, and offered on spot the opportunity for the Canadian scientists to run another intensive program the next year-and this was really the best support the team could receive at the time since the team members needed to concentrate on research, instead of writing proposals and asking for funds. It turns out that the Program (MITACS-MSRI-PIMS Summer Program) was a huge success: the Summer School attracted 43 graduated students, taught by a cast of star researchers in the field, and the workshop attracted researcher scientists from a wide range of areas in communicable diseases, and together this program laid down a solid foundation for the establishment of a Canadian group focused on qualitative research in communicable diseases, and directly collaborating with scientists in government laboratories and medical communities. It is BIRS, together with MITACS, that contributes very much

to the building of national capacity in an area so directly related to the health of all Canadians.

I am also writing in the capacity of one of the organizers for a workshop "Functional Differential Equations" held at BIRS in 2004. The workshop attracted almost all the most active scientists from the world, its impact on the development of this modern area of applied mathematics will be long lasting: the participants had a couple of round table discussions to see how the collaborative spirit and information exchange established in the workshop could be sustained. Already, participants have started working with IMA (USA), Chinese Academy of Sciences, Oberwolfach (Germany) and Erdos Center (Hungary) to see how the group can coordinate its activities globally, and all participants have strong desire to be able to return to BIRS for another stimulating meeting.

Over the years, I have had great fortunate to serve Canadian mathematical community as a member to the board of directors of CAIMS and MITACS, as a member to the research and research prize committees of both CAIMS and CMS, and as a member of the Grant Selection Committee of NSERC. I have thus had lots of opportunities to listen to my Canadian colleagues for their comments on the value of the investment on BIRS, and I must say that all I have heard shows strongly how much BIRS contributes to the substantial growth of reputation and productivity of Canadian mathematical research, and to the building of the national capacity for sustained leadership in science and technology.

Within a short period of time, BIRS has become a national treasure, and we must preserve it!

459 Hadi Kharaghani, Department of Mathematics & Computer Science, University of Lethbridge

I have been an organizer and a participant for a two days workshop at BIRS. During the workshop I had an opportunity to discuss my work with at least three people. There were speakers from almost all continents. I had the most enjoyable experience of asking questions from some of the best researchers in the world. The opportunity was also great for my graduate student, who was also one of the participants, to discuss some of the results of his dissertation with one of the best in the area of his research.

It was my impression that everyone benefited immensely from the short workshop.

I am eagerly looking forward to participating in many of workshops related to my area of research.

460 Odo Diekmann, Utrecht University

The BIRS meeting on delay equations gave me the opportunity to kind of re-enter the field after a period of roughly 10 years in which I worked on other things (only remotely related). This was an EXTREMELY rewarding experience. Due to the close personal contact I could both quickly learn what was going on and establish contacts (in one case I expect this leads to joint work, as we are now exchanging ideas). The atmosphere of the BANFF centre was a great catalyser !

461 David Brydges, Professor, Department of Mathematics, University of British Columbia

I have been to only one workshop at BIRS but in the next 5 months will be at two more. For one of the latter I am an organiser. I am fascinated to see that BIRS already has a huge attraction for my colleagues all around the world in mathematics and physics. Our invitations included some very busy people (e.g., two members of the National Academy and several comparable Europeans) and essentially all our invitees accepted.

The only comparable place is Oberwolfach and the influence that that has had on mathematics and the status of mathematics is very clear. In fact it reaches beyond mathematics because Oberwolfach is also praised and envied by my colleagues in theoretical physics, who have their own physics retreat at Aspen.

I think that BIRS can ultimately be a larger phenomenon than Oberwolfach because it is better connected to North America and better connected to the community outside mathematics.

For these reasons we must do everything possible to see that it continues to flourish. In fact, since I now have a platform, I want to go off on a little tangent about PR: Our society is largely run by people whose view of mathematics was shaped by a first year terminal calculus course. Mostly those courses convey no sense that mathematics is an art, is alive, or is

even useful and they put us in a very bad light compared with other sciences. The mingling of artists and mathematicians at BIRS is a good move, but, perhaps of greatest impact, could be educational and communication initiatives at PIMS/BIRS.

462 Washington Taylor, MIT

I have attended two workshops at BIRS, on two topics related to mathematics and string theory. I have been to many mathematics and physics workshops in many countries. Of all these, I have found the BIRS workshops to be among the very best both in terms of research opportunities and in terms of organization and facilities. The setup at BIRS is ideal–a remarkable setting conducive to thought, and a very good infrastructure with meals and lodging and conference areas all organized around the Banff center, giving participants the opportunity to focus all their energy on research and interactions. I attended a string theory workshop in March 2003 and a smaller "string field theory camp" in July 2004. Both were excellent workshops, and in each I had numerous opportunities for intensive discussions and independent work on my research projects. In particular, at the workshop this summer I had the opportunity to really concentrate on a project I had been working on for almost a year, but on which I was somewhat stuck, and to discuss details of this project with the other participants. Having the time to focus on this project and discuss it with other experts at the workshop was crucial to me in getting through some technical difficulties I was experiencing at that time. What came out of that workshop enabled me to take a new approach to this work, which should result in a publication soon.

More generally, I think that the BIRS is rapidly becoming one of the most prestigious world centers for intense research in areas of mathematical science. I think that it is very important to continue having workshops there, particularly in areas at the interface of mathematics and other closely related areas of fundamental research such as string theory. I think it would be extremely interesting, for example, to have a workshop there on the connections between string theory and number theory, which a few researchers have recently begun to develop.

463 Edward Vigmond, Department of Electrical and Computer Engineering, University of Calgary

I am writing to express my support for BIRS. It is an excellent facility for scientific research and fostering collaboration. I have been there for a MITACS meeting and found that the centre is well run, well organized and well equipped. The location is idyllic, away from the distractions of the city and allowing for scenic outings which allow researchers to interact.

I very much look forward to attending BIRS in the future.

464 Hugh Chipman, Associate Professor and Canada Research Chair in Mathematical Modelling, Department of Mathematics and Statistics, Acadia University

I have recently heard that BIRS is in the process of applying for a renewal of funding. I'd like to offer my support for this initiative by indicating how important this research station is for my research. In 2004, I participated in a very productive BIRS-hosted workshop in the design and analysis of computer experiments. BIRS provided an excellent venue for the event, with all the necessary resources for a successful workshop. In 2005, I will be visiting BIRS once again for another workshop.

The sort of environment that BIRS provides for researchers is unique and invaluable, enabling them to establish new collaborative research relationships, and focus on research with a minimum of distractions. I appreciate your efforts in the renewal process, and hope that it is a success.

465 Jacques Carette, Assistant Professor, Computing and Software, McMaster University

It is definitely to Canada's advantage to continue to have a world-class facility such as BIRS continue to exist and host research meetings as it has. I definitely support BIRS in this endeavour,

466 Evangelos Kranakis, School of Computer Science, Carleton University

During its short existence BIRS has played a significant role in creating a unique collaborative exchange forum of the highest quality within the international mathematical research community by embracing all aspects of modern mathematical thinking from the most pure and fundamental to the most applied. BIRS has become an essential institution in North America and I hope that support will continue for such a vital enterprise.

467 Jean-Marie Dufour, University of Montreal

As a researcher in applied mathematics and director of a team working in the area of financial econometrics, I warmly support the Banff International Research Station (BIRS).

This type of facility plays a very useful role in promoting research and training in the field of applied mathematics, in particular by establishing links between researchers across the country and across fields.

468 Michael Kouritzin, President, Random Knowledge Inc., Professor, Mathematics and Statistics, University of Alberta, Project Leader, Prediction in Interacting Systems Centre of Excellence of the Mathematics of Information Technology and Complex System Network

I am writing in strong support of the renewal for the Banff International Research Station (BIRS). I have had the opportunity to visit BIRS for two highly successful conferences. The facilities were well equipped, well run and the setting was spectacular. Both conferences were able to attract the highest calibre of mathematicians and produce an incredible ensemble of quality lectures. As a founder of a small business, I can testify that the benefit that BIRS provides transcends mathematics into other disciplines and into the North American economy. Finally, as an organizer of relatively large international meetings prior to BIRS, I really appreciate the fact that there is little to arrange in holding a meeting at BIRS and nobody needs to be left out to tend to organizational details.

I look forward to attending several events in the future.

469 Edward B. Saff, Executive Dean, College of Arts & Science, Professor of Mathematics, Vanderbilt University, USA

I am writing to urge continuing support for the BIRS math program. I have had the good fortune to attend a meeting there in the fall and found it to be an excellent opportunity to not only interact with my mathematical colleagues, but to engage in lively discussions with artists, writers, and musicians—certainly a unique opportunity. As Executive Dean of Vanderbilt's College of Arts and Science, I am espe-

cially aware of the intellectual value of such interdisciplinary contacts.

I hope you will continue to provide such opportunities.

470 Peter Berg, Assistant Professor, Physics, Faculty of Science, University of Ontario Institute of Technology (UOIT)

This is a brief statement of support for the renewal application of the Banff International Research Station (BIRS). I consider my participation of a 5-day workshop in 2003 as the most successful and productive conference I have attended to date. This view was shared by many other participants. The site, including the accommodations, common rooms as well as the seminar rooms, are first class, the catering was outstanding. It has also been the only conference so far where I had full access to internet and software (UNIX). I have received similar feedback from colleagues in other fields of research, all of them were positive and supportive. I am looking forward to the next fuel cell workshop in March 2005 and I hope that many more will follow.

471 Anatoliy Swishchuk, Assistant Professor, Mathematical and Computational Finance Laboratory, Department of Mathematics and Statistics, University of Calgary

I have recently participated in MITACS Project Meeting "Modelling Trading and Risk in the Market", November 11-13, 2004, BIRS, Banff, AB, Canada.

I have found BIRS as a very nice place to bring academic researchers in mathematical and computational finance together with risk managers and quantitative analysts from industry to share new ideas, practical and theoretical questions of the moment, current research, and to foster closer collaboration.

In this way, BIRS helped me to be familiar with new results in this area, to make new contacts I have not had early and to originate my paper "Modelling and Pricing of Variance Swaps for Stochastic Volatilities with Delay" during the workshop.

In this way, BIRS is a very useful instrument at the service of the scientific community, a place where research and discussions can be conducted under the best conditions.

That is why I strongly express my support for BIRS.

472 Paul Rabinowitz, Mathematics Department, University of Wisconsin-Madison

I am writing to strongly support continued funding for BIRS. As a coorganizer of a conference held in mid-May, my experience at BIRS was extremely positive. The staff was very helpful both before and during the meeting. The facilities: formal lecture rooms and informal gathering places, housing, food, and computers were excellent. Combining these ingredients with the mathematics and inspiring background of the Canadian Rockies made it a memorable meeting. I am confident that others feel the same way.

473 Paul Goerss, Chair, Department of Mathematics, Northwestern University

This department has benefited enormously from the Banff International Research Station. Among our faculty, Boris Tsygan, Elton Hsu, Matt Emerton, and Jared Wunsch have organized or will organize conferences there and all four speak strongly about their successes to day and of the professionalism of the BIRS staff. In addition, a considerable number of us have attended conferences there and all have been struck by the ability of BIRS attract top-rate participants from the US and Europe; furthermore, it is a great venue to talk to the colleagues from Canada. In short, BIRS has been extremely successful at fulfilling its stated mission as a international gathering place for the best mathematicians. The cost to the NSF is quite small – about $325,000 a year, if I read the budget correctly – and these funds do a great deal for a great many people.

474 Alan Genz, Professor and Chair, Department of Mathematics, Washington State University

I am writing to you to support your request to NSF for continuing funding for the Banff International Research Station for Innovation and Discovery in the Mathematical Sciences. This is an excellent setting and organization for workshops and meetings. Many faculty and graduate students from the Mathematics Department at Washington State University (including myself) have participated in BIRS meetings, and we have found these meetings to be very good venues for developing and encouraging the collaborative work that is a fundamental part of quality research in the Mathematical Sciences. I believe that support for meetings of this type can be much more productive than support for the larger national and international mathematics meetings. BIRS has already established a reputation for help in facilitating collaborative mathematics research work that is similar to the work supported by the Oberwolfach center in Germany. I very strongly endorse the continuing NSF support for the Banff International Research Station.

475 Christopher Bose, Associate Professor, Department of Mathematics and Statistics, University of Victoria, Site Director for PIMS, University of Victoria

My name is Chris Bose and I am a faculty member in the Department of Mathematics and Statistics at the University of Victoria, and, since July 2004 have served as the University of Victoria Site Director for PIMS. Naturally, therefore, I have been an enthusiastic supporter and beneficiary of, both directly and indirectly, the Banff International Research Station(BIRS).

First my own experience with BIRS has been exceptionally good. In September of this year I attended a 3-day meeting at BIRS. As I have been out of North America on sabbatical during the 2003/04 academic year, this was in fact my first visit to BIRS and I was really impressed with the facilities and the potential they hold for serious scientific dialogue on an international level. Later in September, along with colleagues in Canada and the US, we submitted an application for the 2006 program at BIRS for a one-week workshop with more than 40 participants. The topic is Theory and Application of Measurable Dynamics (Ergodic Theory). The application process was refreshingly simple; consequently we were able to concentrate on important parts of planning such as providing for a wide range of invited speakers with the best potential to excite interaction and dialogue between theorist in Ergodic Theory and people working in applications. The idea for this meeting is novel, bringing together two groups who don't normally meet together face to face, although each is quite aware of the developments in the other. Amongst those we contacted, all were excited about the idea, and about the prospect to meet at BIRS which is now well-known to mathematicians around the world. In late December of 2004 we received notice that the meeting was approved and we are really excited about seeing this project realized.

As the local Site Director for PIMS I have assisted colleagues here preparing applications to BIRS and I have talked with those who have returned from meetings there. They all use the same words like 'outstanding', 'invigorating', 'world-class' and so on. Some of these people are veterans of the International Mathematics institute circuit, being regular visitors to Oberwolfach, MSRI, Newton Institute, IMA and so on – depending on the area – so their high praise for the BIRS facility should be taken very seriously.

Finally, a somewhat more general observation. The existence of PIMS itself has made a huge difference to the research culture at the University of Victoria since it's formation in 1998. In some ways, what impresses us most about PIMS is the tremendous utility in scientific activity which is attained with relatively limited funding and sparse infrastructure spread throughout the organization. It seems to me that BIRS has taken this successful model to a higher level – the utility that PIMS has accomplished so successfully at the regional level, BIRS has extended to the international level. I would therefore urge continued support of this singular initiative, both for us in the western mathematics community in North America and for the international community of research mathematicians as a whole.

476 Anna Pratoussevitch, Mathematisches Institut der Universitat Bonn

my stay at the BIRS was very useful and very enjoyable, so it is a pleasure for me to thank the BIRS and people who made the BIRS possible. I am sorry for not being able to answer before December 15th, 2004, but I hope that my answer will be useful, for the next renewal at the latest.

In November 2004 I took part at the workshop "New Techniques in Lorentz Manifold". This workshop was of great interest for me. The workshop brought together mathematicians and physicists working on Lorentz and pseudo-Riemannian geometry. The fact that there were scientists with different background (Differential Geometry, Relativity Theory, Lie Group Theory, Representation Theory) made the discussions very fruitful. Some discussions with the other participants who work in different areas of mathematics were very helpful for me and gave me new ideas for my work.

I am grateful to the BIRS for bringing together mathematicians from different areas.

477 Chuck Newman, Courant Institute of Mathematical Sciences

I'm very pleased to write in support of the Banff International Research Station (BIRS). I have long felt that BIRS plays a very significant role in North American and International mathematical and scientific life. Quite a few of the Courant Institute faculty and postdocs have participated in BIRS activities, and I am personally looking forward to my May, 2005 attendance at the workshop on Critical Scaling for Polymers and Percolation. BIRS plays a much different role than other North American mathematical sciences institutes, and functions as our counterpart to Oberwolfach. In these days of increasing international cooperative activities in science, and difficulties for some scientists to obtain U.S. visas, we are particularly lucky to have a high quality institute like BIRS. It well deserves continued support.

478 Tom Hurd, Professor of Mathematics, McMaster University, Walter Schachermayer, Professor of Mathematics, Vienna University of Technology

It is a pleasure for us to write a letter to support the ongoing mathematical activities of the Banff International Research Station. As a participant (Prof. Schachermayer) and organizer (Prof. Hurd) of the June 2004 program "Semimartingales in Finance: theory and applications", we highly appreciated the opportunity to spend 5 stimulating days in a glorious natural environment, at a meeting of 40 of the world's top experts in the area of financial mathematics. The quality of the mathematics presentations was excellent, and the opportunities for high level but informal interaction between researchers were extremely valuable.

The assistance the BIRS staff made the organization of the meeting very easy, the presentation facilities worked faultlessly, and no glitches got past the technical support. It seems that for future BIRS meetings, the combination of excellent facilities in a beautiful location will always guarantee to attract the world's best mathematicians. Canada should be proud to be hosting this unique facility.

A very specific example of how this type of meeting can be of benefit occurred when the two of us were able to get together to go carefully over a manuscript by Prof. Hurd. The helpful comments of Prof. Schachermayer resulted in major improvements in the work, and its speedy publication in the journal Statistics and Decisions.

One of us (Prof. Hurd) was able to return to BIRS in November for a 2 day program bringing together academics and industry practitioners to discuss matters in financial mathematics. Again, the facility functioned flawlessly, and the attractions of BIRS brought people who might otherwise have not come.

We wish BIRS all success in its renewal proposal.

479 Ian Frigaard, C.Math, Associate Professor, Department of Mechanical Engineering, Department of Mathematics, University of British Columbia

I write in strong support of renewal of BIRS. It is an institute unique in North America that attracts the best from around the world and allows a range of retreat-style interactions that are very difficult to realise without this type of infrastructure.

The initial years have resulted in broad representation of the full spectrum of mathematical fields, with a good mix of application oriented workshops that attract many other scientists and engineers.

480 Robert M. Miura, FRSC, Professor, Departments of Mathematical Sciences and Biomedical Engineering, Associate Chair, Department of Mathematical Sciences, Director, Division of Biological Sciences (DMS), Professor Emeritus, Mathematics, University of British Columbia

I am writing to give strong support to the renewal of the funding for the Banff International Research Station (BIRS). Unfortunately, I left UBC just as BIRS was getting started, so I was unable to take advantage of the facilities and infrastructure before leaving. However, this past year, we applied for and received a BIRS Focus Research Group workshop for March 2005. This workshop has not yet taken place, but it will allow us to bring together researchers from the US, Canada, Great Britain, and Hong Kong to work on a class of problems in which we have related expertise. This opportunity could not have occurred in North America without the BIRS program. There are other programs at BIRS, which we would like to apply for in the future. I strongly recommend continued funding of BIRS as a unique North American facility for research in the mathematical sciences jointly sponsored by Canada and the US.

481 Jae-Yeon Joo, On behalf of Dohan Kim, Director, BK21 Mathematical Sciences Division, Seoul National University

On behalf of Dohan Kim who is the Director of BK21 Mathematical Sciences Division at Seoul National University, I agree with you on the matter of continuation of BIRS. It is a worthwhile project at the service of the scientific community. Our Students and faculty members have benefited by participating in workshops held at BIRS.

We want Banff International Research Station (BIRS) to be continuously supported.

482 Nancy Reid, President, Statistical Society of Canada, University Professor of Statistics, University of Toronto

I am writing on behalf of the Statistical Society of Canada to express our strong support for the Banff International Research Station. This facility has quickly established itself as a valuable resource for research in the statistical sciences, and has become internationally known as a splendid venue for workshops and as a place for cutting edge research. It has strengthened Canada's international reputation as a leader in the mathematical sciences, and has opened new avenues of collaboration with our colleagues in the United States through the example of an international joint venture of the highest calibre.

483 Steffen Lempp, Department of Mathematics, University of Wisconsin

I would like to voice my support for continued funding for the Banff International Research Station (BIRS). It is crucial to have centers devoted to mathematical research in North America! In fact, some colleagues of mine and I are planning to apply for a one-week conference in Banff in the near future.

484 Aloysius G. Helminck, Associate Head, Department of Mathematics, North Carolina State University, Jean-Pierre Fouque, Interim Head, Department of Mathematics, North Carolina State University

We are writing to express strong support for the continuation of the Banff International Research Station (BIRS). The existence of this type of conference center is crucial to continued progress in mathematics.

Great advances in mathematics are often made by the collaborative efforts of key researchers brought together in a conducive environment such as the Banff center.

The Banff center was originally modeled after the highly regarded Oberwolfach Center in Germany. That center runs small workshops in mathematics as selected by top German and EU researchers. There are many examples of pivotal breakthroughs that were accomplished at Oberwolfach meetings. It has stimulated much of the mathematical research in Europe in the last 50+ years. It is a mark of distinction for an area to have an Oberwolfach meeting.

While modeled on Oberwolfach, the Banff center is much broader in scope. The Banff center has made an effort to cover the broadest possible spectrum of mathematics. Both pure and applied areas are well represented as well as programs about mathematical education and workshops for graduate students. As well, Oberwolfach requires significant German or EU participation at any event while the Banff Center is dedicated to the research interests of North American Mathematicians. Thus this center offers North Americans the same opportunities as the Europeans have at Oberwolfach and provides a showcase for North American mathematics. To date the conferences at Banff have been of extremely high calibre. Like Oberwolfach, the list of subjects gives an excellent portrait of the best current mathematics in Canada and the US. It also exhibits the vision of our mathematicians and foreshadows the next big achievements. Compared to Europe, North American is still a new continent, and one in which rich tradition is valued but new ideas are paramount. The mathematics at the Banff center similarly includes both classical theoretical fields and exciting new interdisciplinary directions.

The Banff Center has the potential to surpass Oberwolfach as the premier mathematics research and conference center in the world. To achieve this status, a center must select the best workshop programs and provide the ideal (idyllic) atmosphere. The Banff Center has done both. It has fostered lively interaction between the participants, leading to original ideas and new directions in research. Our faculty who have participated in workshops or conferences at the Banff center rate it among the best in the mathematical sciences. The all inclusive facilities build a close knit atmosphere which is extremely conducive for doing synergistic mathematical research.

We highly recommend the continued funding of this important resource for the mathematical sciences. The walls of the Banff center will quickly become the most referenced wellspring of new mathematical problems and solutions.

485 Ralph Showalter, Department of Mathematics, Oregon State University

I write in support of continued NSF financial support of the Banff International Research Station (BIRS). This center plays a valuable role in the life of our Mathematics Department. A number of our faculty have been involved individually as participants in the programs.

In addition, PIMS has provided some support and the conduit for some valuable regional seminar series. I refer specifically to the Pacific Northwest Numerical Analysis Seminar, the Pacific Northwest PDE Seminar, and the Pacific Northwest Geometry Seminar.

Each of these has been a valuable resource for our faculty, and we plan to utilize the BIRS even more

actively in the future. We urge the NSF to continue support of this very valuable international resource for the mathematics community.

486 Thomas Ward, Head of Department, School of Mathematics, University of East Anglia, England

I attended the workshops "The many aspects of Mahler measure" in April 2003 and "Joint Dynamics" in June 2003 at BIRS. Both were extremely helpful in generating research ideas and contacts, which I expand on below. The setting of BIRS, both physically and psychologically far away from the pressures of routine academic life, together with the exceptionally unobtrusive and efficient people involved, and the arrangement of rooms to encourage informal collaboration, makes it a unique place for promoting mathematical research.

The Mahler measure workshop brought together (despite 60cm of snow closing Calgary airport!) a diverse group of researchers from the fields of ergodic theory, number theory, geometry and group theory with a common interest in Mahler measures. This was a unique opportunity to meet these people, and I would identify several research ideas that grew from contacts made there. First, I was able to continue a collaboration with Doug Lind on amoebas and directional entropies. This is a substantial project, not yet submitted, and it was given essential impetus by the chance to spend time at BIRS with Lind. Second, conversations with several number theorists there (Lalin and Dobrowolski) encouraged me to try and formulate the appropriate combinatorial analogue of Lehmer's problem (see [1] below). Research contacts made at the workshop have led directly to visits to UEA by Sinclair and Besser, and to me being invited to attend a follow-up workshop in Luminy in May 2005.

The Joint Dynamics meeting was more tightly focused on the dynamical properties of commuting transformations. At this meeting I was able to complete the work on the combinatorial analogue of Lehmer [1] and continue a collaboration with Einsiedler [2], [3]. It was also a valuable opportunity to learn exciting developments on amenable group actions (Rudolph), rigidity and connections to quantum unique ergodicity (Einsiedler and Lindenstrauss) and some progress in classical ergodic theory (Thouvenot). Some of these themes were picked up at an MPI workshop in Bonn in June 2004, where Einsiedler reported on developments in his joint work with Lindenstrauss.

BIRS is a very special place, clearly able to attract mathematicians of the highest quality from all over the world and provide them with an ideal working environment. I found both visits productive, stimulating and enjoyable.

[1] T. Ward; "Group automorphisms with few and with many periodic points" Proc. Amer. Math. Soc., 133, 91-96, 2005. (arXiv:math.DS/0306292) [2] M. Einsiedler & T. Ward; "Entropy geometry and disjointness for zero-dimensional algebraic actions" Journal fr die riene und angewandte Mathematik, to appear. (arXiv:math.DS/0211447) [3] M. Einsiedler & T. Ward; "Isomorphism rigidity in entropy rank two" Israel Journal of Mathematics, to appear. (arXiv:math.DS/0309161)

487 Karen Rudie, Associate Professor, Department of Electrical and Computer Engineering, Queen's University

I co-organized and participated in a workshop on Decentralized Discrete-Event Systems held at BIRS May 13-15, 2004. I cannot say enough good things about BIRS, about our workshop, and about the setting of the workshop. I have been working in discrete-event systems for about 20 years (first as a graduate student and now as a professor) and have been to dozens of conferences and workshops. Generally I find these meetings to be almost useless in terms of learning about material in the field: presentations are usually poorly done and ill-prepared; there is an overload of talks with little time to let information sit and percolate; and there are so many people from so many different areas that it is nearly impossible to even meet people with whom one could have a useful and engaging work-related talk. In contrast, BIRS provided the perfect level of intellectual interaction.

First of all, the quality of talks at the BIRS workshop was leaps beyond the quality of talks at any other conference or workshop that I've been to. Secondly, the informal atmosphere and relatively small group size meant that we could chat together over lunch and dinner. I had been hesitating about attending the workshop because I knew I'd have to bring along my 6-month old son and so the logistics of travel and attendance were not insignificant for me. Furthermore, as a new mother (of a baby

who'd been hospitalized due to severe illness), I was sleep-deprived and exhausted and was worried that my abilities to concentrate were so diminished that it might be a waste of time for me to attend the BIRS workshop. However, this workshop completely re-energized me and rejuvenated my research interests.

If nothing else had come from this workshop for me, it still would have been the most useful professional meeting I'd attended in many years. However, beyond the general intellectual and technical benefits from learning about the work of others in the field, I also reconnected with Prof. John Thistle (University of Waterloo) whom I knew from graduate school and whose research has interested me for years. After BIRS, John and I talked about collaborating on some research. He has since visited me here at Queen's University and we've talked on the phone and emailed about the problem we want to tackle. I believe that our interaction (and hopefully our future research collaboration) is a direct result of the workshop at BIRS.

It would be a shame if BIRS did not continue to offer workshops of the type I attended. I believe BIRS is unique not only in Canada but possibly in North America both in its mission and in its setting.

488 Mark Kelly, Fair Isaac, UK

My BIRS visit was an excellent experience which enabled collaboration with people in my field with whom I would usually not interact with. The facilities are excellent and location conducive to spending time considering research possibilities. I wish you every success in extending your operations to 48 weeks as I consider the BIRS experience to be a very valuable one.

489 Melvin Hochster, University of Michigan

The talk discussed consequences of the existence of big Cohen-Macaulay algebras in a sufficiently functorial (albeit "weakly" functorial) sense and the conjecture that this existence is equivalent to the existence of a "good" tight closure theory in any given characteristic, including mixed characteristic. Ideas that move in the direction of making this into a precise conjecture were presented, several of which are due to Geoffrey Ditez. There was also discussion of some closely related questions: when can an algebra over a complete local domain be mapped to a big Cohen-Macaulay algebra, and, given elements in a Noetherian ring, when can one map to a ring in which they form a regular sequence? Characterizations of tight closure were presented, as well as some recent results of Holger Brenner in dimension two. The notion of phantom extension in tight closure theory was defined, and it was explained how this idea can be used to prove the existence of big Cohen-Macaulay modules, which may lead to a technique for resolving other, still open questions. Results of Dietz on the relationship of phantom extensions, direct limits of phantom extensions, and solid extensions, and their relevance to the problems under consideration, were also explained.

490 Jim Bryan, University of British Columbia

I've had nothing but fantastic experiences at BIRS, both as a participant and as an organizer. For example, I have had many people comment to me about my workshop "The interaction of finite type and Gromov-Witten invariants". At least four people have told me (months after the workshop) how useful the workshop was for them. We are currently putting together proceedings from the workshop that will be published in Geometry and Topology Monographs series.

The contacts with physicists that I made at the superstring workshop (the very first workshop at BIRS), have proved especially valuable. Mathematicians and physicists have a lot to say to each other, but don't always move in the same circles. The workshop raised my profile in the physics community and subsequently, my work has be better absorbed by the string theory community.

491 Michael Pelsmajer, Illinois Institute of Technology

Sorry for not replying sooner. I presented a paper at the Workshop on Combinatorial and Algorithmic Aspects of Networking, August 5-7, 2004. This was extremely valuable to me as the paper is rather graph theoretic network routing, and the workshop brought together a community that was interested in this sort of topic. Previously I have primarily associated with people working in graph theory and combinatorics, and I wouldn't have been aware of these people and their interesting work without the workshop.

492 Danielle Hilhorst, Directeur de Recherche at CNRS

I have been attending a double conference at Banff station in August 2003, namely, Localization Behavior in Reaction-Diffusion Systems and Applications to the Natural Sciences and Defects and their Dynamics. I must say that I greatly enjoyed this event. On the one hand, it permitted me to get within a week a broad overview on the qualitative behavior of solutions of reaction-diffusion systems arising in several fields of application, and on the other hand, to learn about the most recent results about picking solutions and defects. Further, the location of the Banff center is wonderful with the surrounding mountains and forest, and this together with the very comfortable and modern housing, with computer terminals in each bedroom, made of our stay a very pleasant one.

Such a modern Conference Center in a gorgeous scenery together with very exciting workshops makes of Banff International Research Station an invaluable place where one would like to be invited very many times, and possibly could even dream to organize an own event sometime in the future.

493 Arian Novruzi, Department of Math & Statistics, University of Ottawa

This is a support letter for BIRS. Though somehow late, I hope this letter may be still added to the large support that BIRS has already received.

I have had the occasion to visit BIRS center twice these last four years, and I like to point out what makes BIRS a spectacular research center and a necessity for scientific community.

+ BIRS is a unique center where scientists, from a large geography, gather around particular projects and work with a wonderful effectiveness. I have been twice at BIRS, each time has been a source of ideas for my research.

+ BIRS encourages the meeting of scientists around a particular theme, so essentially there are the most exceptional scientists of the theme. This makes BIRS a wonderful place for scientific exchange and gives birth to new collaborations.

+ finally, BIRS, with its perfect organization and with the extraordinary landscape that surrounds it is a absolutely wonderful scientific place of motivation. It's a place where nature incites for the perfection. BIRS is a must for scientific community.

I fully support BIRS and I wish to it continuing in the road of success, for the benefit of Mathematics, Science in general, and of Canada.

494 Niky Kamran, Department of Mathematics, McGill University

It is with great pleasure that I am writing to express my strongest support in favour of continued and increased funding for BIRS.

I have had the privilege of co-organizing with Peter Olver a workshop on differential invariants and invariant differential equations, which was held at BIRS in the Spring of 2003. This meeting gave the opportunity to people who are normally thought of as belonging to different research communities within mathematics to communicate in depth, and learn from each other. We had assembled a group of first-rate geometers, analysts, representation theorists and mathematical physicists who were interested in important topics such a geometric curve evolutions, integrable systems and conservation laws. The result was a resounding scientific success, whose ramifications can still be seen today through the many collaborations initiated during the conference.

I would also like to add that the logistical support offered by the staff at BIRS before and during the conference was exemplary.

I is manifest that BIRS is a tremendous asset to Mathematics in Canada and North America, and that it has quickly become a focal point worldwide for mathematical activity of the highest caliber. It is also a reflection of the vitality and strength of mathematics in Canada.

495 Radu Bradean, Senior Applied Scientist/Engineer, Ballard Power Systems

I have participated in the Computational Fuel Cell Dynamics II workshop at the Banff International Research Station in 2003. I would like to acknowledge BIRS as an excellent location for a workshop, with

numerous facilities that stimulate research collaboration. At CFCD II I met numerous key fuel cell researchers from academia and industry and the presentations and the following discussions have been very useful in my recent work at Ballard Power Systems, one of the leading fuel cell companies. Some of the results, concepts or ideas presented at CFCD II were considered into the development of the new generation of automotive and stationary fuel cell stacks, but also in the development of modeling and experimental tools to be used in the design process. In summary, I strongly recommend the BIRS CFCD workshops as very useful for any fuel cell researcher.

496 Kaleem Siddiqi, Associate Professor, School of Computer Science & Centre For Intelligent Machines, McGill University

I would like to add, to the list of emails you have received, my strong support for BIRS. I attended one workshop in 2003 (on Differential Invariants and Invariant Differential Equations, organized by Niky Kamran and Peter Olver) and a second workshop in 2004 (On Mathematical Image Analysis and Processing, organized by Mary Pugh, Selim Esedoglu, Sung Ha Kang and Jackie Shen). Both were terrific experiences. I met several researchers in fields related to mine, who I would not normally be in contact with since they publish in different venues. I enjoyed the informal atmosphere, and particularly the opportunity to share ideas in a relaxed environment.

497 Kobi Peterzil, Department of Mathematics, University of Haifa, Israel

In April 2004 I visited the Banff Institute as part of a workshop in the topic of Model Theory. During the week long workshop we heard some very interesting talks from specialists in various topics. One of the advantages of this meeting was the fact that it brought together people from Model Theory and nonlogicians such as Frank Loeser, Jean Philippe Rolin and others.

The accommodation was wonderful and the beautiful surroundings made it possible to combine mathematical discussions with walks in the mountains. The particular problem I was trying to solve at the time, Pillay's conjecture for groups in o-minimal structures, was discussed in details and was thus introduced to several people for the first time, some of them have already made serious contributions towards its solution.

I will certainly love to go back to the Banff Institute when I am invited next.

498 Andreas Frommer, Department of Mathematics, University of Wuppertal, Germany

I am writing this letter to support the next funding period of BIRS. I was an attendee to the BIRS workshop Theory and Numerics of Matrix Eigenvalue Problems in November 2003. This was one of the most stimulating meetings I attended ever, due to the relatively small audience, the well focussed topics and the unique atmosphere at the Banff Center. The workshop triggered my cooperation with Prof. Ilse Ipsen from Raleigh on matrix methods in theoretical physics, We will present a joint minisymposium at the next SIAM annual meeting in New Orleans.

It is also worthwhile mentioning that the BIRS concept is very convincing for funding agencies: I had no problem getting travel support to cross the Atlantic form the German Science Foundation (DFG).

499 Anthony Lau, Department of Mathematics, University of Alberta

I want to say that Banff International Research Station is one of the most brilliant and important Mathematical Institutes created in Canada and around the world. During the past two years, it has through its workshops (both 5 days and 2 days) brought to Canada numerous research mathematicians of the highest level. Interactions at the 2 weekend workshops I have attended were always lively and fruitful.

Personally I have benefited tremendously from one of 2-day workshops I attended in March 2003, where I had very fruitful discussions with Professor Garth Dales (Leeds, UK) on our collaborative works resulting in a 200 page research monograph which has recently been accepted by the Memoir of the American Math Society.

I strongly support funding renewal for the Banff International Research Station.

500 Wolfgang Ruess, Mathematics Department, Essen University, Germany

it is a pleasure for me to express my appreciation and thanks to BIRS. In early November of last year, I've had the privilege to attend a workshop at BIRS. To me, BIRS is one of the few meeting places in the world, comparable, as for me, only to MSRI Berkeley and the Oberwolfach Institute, with ideal conditions for researchers to get together on the profound exchange on the actual state of the discipline. The workshop at BIRS, with its ideal overall academic and research atmosphere, turned out stimulating in all directions: learning from my colleagues about their latest results, discussing ongoing research and initiating joint research projects, and also presenting results of my own. Clearly, due to the particular international spectrum of participants, I was also able to start new personal contacts with fellow colleagues I would not have met otherwise. Altogether, this is an invaluable asset of places such as BIRS.

As an aside, I would want to mention that the surrounding facilities at BIRS, such as the arts center, accommodation and dining, are superior to those at the other places I mentioned.

All in all, Canada and, for that matter, North-America altogether, is to be congratulated for a research place such as BIRS; as I said at the beginning: there aren't many such in the world! I thus wish and hope that this one-of-a-few opportunity can prosper further and, possibly, can be enlarged both with respect to participating institutions and with respect to its program and service to the scientific community.

For this, as well as for you personally, I would want to extend my best wishes.

501 Richard Montgomery, Mathematics, UC Santa Cruz

Regarding PIMS and BIRS. I had the great pleasure of attending the conference on celestial mechanics at Banff organized last year by Florin Diacu. It turned out to be quite useful for my research, and those of others attending. The work of Marshall Hampton was especially enlightening. Hampton and Moeckel had just made significant progress on one of Smale's open problems for this coming century by establishing the finiteness of the number of central configurations for the Newtonian 4-body problem. The fact that there are active artist's workshops on the Banff facility turned out to be of particular use. Hampton built some polytopes to illustrate the Newton polytopes arising in his analysis, and these were a great aid to his talent.

The natural surroundings, the high quality of the facilities, and the organizational smoothness of BIRS all contributed to a first class international workshop.

502 Rose-Anne Dana, CEREMADE, Universite Paris IX - Dauphine

I have attended the workshop on mathematical structure in economic theory in may 2004. The aim of the workshop was to present a brief overview of the topic of mass transportation and a few applications to economics and to bring together a group of economists and a group of mathematicians. I am a mathematical economist and while I don't work with the techniques of mass transportation in economics I do work with very close techniques. So the workshop was a very very nice opportunity for me to expand my knowledge of the mathematics of the subject and to learn about a number of applications to economics with which I was very unfamiliar. This was quite important for me, because I have now around me so many people dealing with the topic (even in dynamical systems). I very much enjoyed the organisation of the workshop which was dense but not too dense and left some time for private discussions and the whole place. Finally I would like to say that I very seldom have the opportunity to spend sometime with a group of (very well known) people who do not have an infinite number of other constraints and are "available". I very much hope I shall have the opportunity to come back.

503 Qiyan Shi, Department of Mathematical Sciences, Tsinghua University, Beijing, China

I was a participant in one of BIRS summer workshops in 2003, and it was a great experience for me. I had the opportunity to meet many of my fellow

researchers. The workshop was a great way to expand my exposure in the field and to keep abreast of the latest developments. The BIRS staff was very friendly and helpful. I wish Banff International Research Station continues to thrive and to provide more of the excellent service to the scientific community. I for one would certainly like to have opportunities to participate and contribute in similar workshops in the future.

504 Valerie Berthe, Laboratoire d'Informatique, de Robotique et de Microélectronique de Montpellier (LIRMM)

I have attended the workshop "Aperiodic order: Dynamical systems, Combinatorics, and Operators", BIRS, Banff, Canada, May 29- June 2004.i This meeting has been crucial in the present state of my research since allowing me to meet and to discuss with people with whose work I was not enough familiar (B. Moody, J.-Y. Lee, M. Baake...) on quasicrystals and topology of tilings, and to initiate some collaboration with J.-Y. lee in particular. The exceptional conditions in which this meeting has taken place due to the facilities given by the BIRS center have made of this workshop a very efficient discussion place.

505 Brett Stevens, Carleton University

I was the contact organizer for workshop 04w5039, "Generalizations of de Bruijn Cycles and Gray Codes" held December 4–9. The Banff International Research Station is a wonderful resource for the mathematics community and the society that they serve. First, the Stations administrative staff and organization made the planning of the conference very smooth and quite painless. This allowed myself and the other organizers to focus on the mathematics rather than on the many details of running a conference.

The format of the workshops is very conducive to collaboration and investigating new ideas. The facilities are excellent! The BIRS lounge, where an excellent breakfast is available, became a lively discussion area. Colleagues were working on new projects; people who had just met were brainstorming ideas for new directions for research! The Banff centre is a great place for workshops of this kind; offering wonderful facilities, beautiful surrounds.

I met many incredible researchers at BIRS and came up with at least four ideas for new research. Additionally I have met the people I am likely to collaborate with on these new directions. It was also a chance to strengthen older relationships.

506 Brad Jackson, San Jose State University

Banff is certainly a beautiful place for a conference. I found several interesting problems to work on. Tom Roby and Julian West and I found a canonical way to generate permutations of an n-set while we were there. I also found a way to construct some de Bruijn tori using the wraparound technique (the last element in row i is adjacent to the first element of row i+1) that I mentioned to Glenn in Banff.

507 Carla D. Savage, Professor, Department of Computer Science, North Carolina State University

I participated in the BIRS workshop, "Generalizations of de Bruijn Cycles and Gray Codes", December 4–9, 2004, at the Banff Centre. I would like to express my sincere gratitude to BIRS and the workshop organizers (Brett Stevens, Joe Buhler, Persi Diaconis, Fan Chung, Ronald Graham, and Frank Ruskey) for arranging such a stimulating, productive, and enjoyable event. I am also grateful to the organizations whose funding and planning made such meetings possible, including NSERC, NSF, PIMS, MSRI, ASRA, and MITACS.

The facilities were amazing, with computers, internet access, and access to MathSciNet in every room. I found this extremely useful for retrieving references during the meeting. The scenery was breathtaking and there were stimulating cultural activities on campus such as lunchtime concerts and an exhibit on art and databases. We were generously supplied with comfortable accommodations and delicious food, which allowed us to work with no distracting responsibilities. The well-stocked BIRS Lounge fostered round-the-clock interactions between the participants.

The organizers took advantage of this unique opportunity (the facilities, the lure of the setting) to

bring together a group of researchers who had been working on different aspects of similar problems - a nice mix ranging from senior researchers with classical results to young researchers with new techniques, to graduate students starting their research. The daily sessions were highly interactive, a nice blend of presentations and discussions of open problems and applications.

Everyone left with a broader perspective on the area and with a collection of new problems and new techniques. I observed several new collaborations forming. I have since been working on one of the open questions, continuing work started at the meeting with another participant.

This workshop was a shot of adrenaline to the area of de Bruijn Cycles and Gray codes. I expect over the next year to see significant advances.

508 Robert Johnson, Queen Mary University of London

I really enjoyed Banff and came away with lots of things to think about. Thank you for your effort in organising the meeting and for inviting me to be part of it.

I thought that BIRS seemed an excellent institution. The facilities and location of it played a big part in making the week productive and enjoyable for me.

509 Hal Fredricksen, Naval Postgraduate School

You hosted a wonderful conference. I was delighted to be included. It wasn't only the subject - the people were also simpatico.

510 Kevin O'Bryant, University of California, San Diego

I'd known about de Bruijn cycles for a decade, but wasn't aware of where the research vistas were. The conference has opened a new research front for me.

511 Alexandru Nica, Associate Professor, Department of Pure Mathematics, University of Waterloo

I am writing to express my support for the Banff International Research Station, in connection to the proposal for its renewal.

Since BIRS has started its activity, I was involved in two 5-day workshops organized at the station: once as a participant (in a workshop on algebraic combinatorics in May 2003), and once as an organizer (for a workshop in free probability, in October 2004). On the occasion of both these workshops I was strongly impressed by the exceptional environment for mathematical interaction which is offered by BIRS. While set in a very friendly and informal manner, the workshops were nevertheless very intense, and were highly conducive for meeting new people and for starting on new research projects.

The BIRS workshop on free probability in October 2004 (organized by Roland Speicher, Dan Voiculescu, and I) brought together a very strong group of mathematicians representing several current directions of development in free probability and its relations to operator algebras, classical probability, random matrices, and combinatorics. This continued a sequence of very successful 5-day workshops organized on these lines, like the ones at the Fields Institute in March 1995, at CIRM Luminy in January 1998, and at MSRI in January 2001.

On the other hand I should mention that I felt particularly well the special quality of the BIRS environment when I attended the algebraic combinatorics workshop in May 2003. Combinatorics is not my primary direction of research, but I felt very much at ease at that workshop. I got a chance to meet in person people whose papers I had read and cited in my own work (like Mireille Bousquet-Melou and Vic Reiner), and I got a chance to promote ideas from the combinatorics of free probability to an audience lying outside the range I can normally reach. I hope that my mathematical interactions with people met at that workshop will continue (in the meanwhile I have co-organized with Vic Reiner and Jon McCammond a workshop covering connections between combinatorics, free probability, and geometric group theory).

I think there is no doubt that BIRS is a great asset for the Canadian (and more generally, North-American) mathematics to have. I hope that the sta-

tion will be renewed and that it will continue to serve the mathematical community at the same high level of excellence as it does in the present.

512 Yasong Jin, University of Kansas

I am a Ph.D candidate in mathematics at University of Kansas. I attended the 6th PIMS-IMA Graduate Mathematics Modelling Camp from May 17 to 22, 2003 in BIRS, Banff, Alberta. The activities in BIRS were exciting and full of fun. I participated in the project "Modeling PCR devices for Fun and Profit". By the hard work of all the group members, the project was successfully accomplished. My computer skills, interpersonal abilities were greatly sharpened in the project. The activities in BIRS encouraged me and gave me confidence on my research work. And the people in BIRS are very friendly and helpful. The facilities are very impressive. I hope their proposal will be approved.

513 Carla D. Savage, Professor, Department of Computer Science, North Carolina State University

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The organizers took advantage of this unique opportunity (the facilities, the lure of the setting) to bring together a group of researchers who had been working on different aspects of similar problems - a nice mix ranging from senior researchers with classical results to young researchers with new techniques, to graduate students starting their research. The daily sessions were highly interactive, a nice blend of presentations and discussions of open problems and applications.

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514 Julian West, Malaspina College, Nanaimo

The BIRS workshop I attended was a great help in bringing me in contact with other active researchers. This led directly to the solution of a problem on which my colleague and I had stalled after making some partial progress. Immersion in this kind of active research environment is a rare treat for those of us who are isolated at small regional universities and colleges, and I have no doubt that BIRS will continue to provide similar benefit to dozens and hundreds of my peers across Canada in the future.

515 Leonard Schulman, Associate Professor of Computer Science, Director, Center for the Mathematics of Information, Caltech

I've had the pleasure of visiting the Banff Station twice and found it to be a wonderful place to meet and work with other researchers. Among the numerous ways that seminars, conversations and hikes there have been useful, the most concrete is the following. A coffee-break conversation at a Banff workshop brought my attention to a particular problem, which I subsequently worked on for a fairly long time. This led to a paper:

Physical limits of heat-bath algorithmic cooling Leonard J. Schulman, Tal Mor, and Yossi Weinstein

which will appear shortly in Physical Review Letters.

516 Des Sheiham, International University Bremen

I'd like to provide some brief testimonial regarding my experience in Banff. I attended a meeting in May of 2004 on Knots and Their Manifold Stories. The facilities and accommodation were excellent, and the conference was highly stimulating. I had opportunity to learn from and establish contact with very interesting people and to present my work to a highly distinguished audience. I'm very grateful to everyone involved with BIRS and PIMS for their work and I'm very happy to hear that there has been success in obtaining further support for BIRS.

517 Seongtag Kim, Department of Mathematics, Sungkyunkwan University, South Korea

I participated in 5 day workshop "Monge-Ampere Type Equations and Applications" in August 2003 while I was visiting Princeton University for my sabbatical year. The workshop was excellent and very helpful for my research. BIRS is one of the best places for exchanging mathematical ideas. It was a great experience for me and it should be continued in the future for the mathematical community. I strongly support the renewal of BIRS program.