

Curriculum Vitae

Jonathan Michael Borwein

July 9, 2004

1 Personal information

Name: Jonathan Michael Borwein

Date of Birth: May 20, 1951

Place of Birth: St. Andrews, Scotland

Citizenship: Canadian and British

Marital Status: Married (three children)

Home Address: 857 Bridges Street, Halifax NS, B3H 2Z6

Work address & other data

Faculty of Computer Science, Dalhousie University,
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2 Academic information, Prizes and Awards

Degrees Obtained:

B.A. (Honours Math) 1971, University of Western Ontario

M. Sc., 1972, Oxford University (Jesus College)

D. Phil., 1974, Oxford University (Jesus College)

Areas of Research: Optimization, Functional Analysis, Analysis, Number Theory, Computation and Collaboration.

Title of M. Sc. Thesis: Monotone Operators and Non-Linear Functional Analysis

Title of D. Phil. Thesis: Optimization with Respect to Partial Orderings

Scholarships, Prizes and Awards:

Timkins International Fund Scholarship 1968

Albert O. Jeffrey Scholarship 1969

Kingston Gold Medal for Honours Mathematics 1971

U.W.O. Faculty Association Scholarship 1971

Ontario Rhodes Scholarship (Jesus College) 1971-74

Coxeter-James Prize Lecture (Canadian Mathematical Society) 1987

APICS/Fraser Medal for Research Excellence 1988

[Atlantic Provinces Council on the Sciences Medal for Outstanding Achievement in Natural or Applied Science: for scientists under 40 working at any organization in Atlantic Canada]

Chauvenet Prize of the Mathematical Association of America 1993

for the “outstanding survey or expository mathematics paper” published in a North American Journal: J.M. Borwein, P.B. Borwein, and D.H. Bailey, “Ramanujan, modular equations and pi or how to compute a billion digits of pi,” *MAA Monthly*, **96** (1989), 201–219.

Merten M. Hasse Prize Mathematical Association of America 1993
for a “noteworthy expository paper in an Association Journal one of whose authors is younger than forty” for J.M. Borwein, P.B. Borwein, and D.H. Bailey, “Ramanujan, modular equations and pi...”.

Fellow of the Royal Society of Canada (Academy of Science) 1994

British Columbia/CUFA Academic of the Year 1996

BC Confederation of University Faculty Associations, jointly with P. Borwein

Doctorat Honoris Causa University of Limoges, September 22, 1999
and accompanying AMS-CMS Proceedings on *Constructive, Experimental and Nonlinear Analysis*, Michel Thera ed., AMS, 2000, 289 pp., Softcover, ISBN 0-8218-2167-9

National Alumni Award of Merit University of Western Ontario (Western Family Citation)
October 1, 1999

HPL/MSRI Special Visiting Professor Hewlett Packard, MSRI and Lawrence Berkeley
(declined) Spring 2001

Fellow of the American Association for the Advancement of Science (AAAS), September 2001.

”A Member whose efforts on behalf of the advancement of science or its applications are scientifically or socially distinguished may, by virtue of such meritorious contributions, be elected a Fellow by the Council.”

Identified as one of “**25 Power Thinkers. Some of B.C.’s best and brightest.**” BC
Business, June 2002.

Highly Cited Researchers Database (ISI) <http://isihighlycited.com>, March 2003.

As one of the roughly 200 most cited mathematicians of the period 1980-1999.

Elected **Foreign Member Bulgarian Academy of Sciences**, July 2003.

Visiting **Maclaurin Fellowship**, New Zealand Institute of Mathematics and its Applications
(NZIMA), November 2004.

3 Academic positions held

1974–75 Post Doctoral Fellow, Dalhousie

1975–76 Lecturer and Research Associate, Dalhousie

1976–80 Assistant Professor, Dalhousie

1980–82 Associate Professor with Tenure (On Leave), Dalhousie

1980–81 Assistant Professor, Carnegie-Mellon University

1981–82 Associate Professor, Carnegie-Mellon University

1982–84 Associate Professor, Dalhousie University

1984/03–1993 Full Professor, Dalhousie University

1985 (3/1-7/31) French National Fellowship, Limoges, Prof Invité

1986 (1/1-7/31) Distinguished Visiting Professor, Centre de Recherches Mathématiques, University of Montreal

1987–88 Senior Killam Fellow, Dalhousie University

1988 (6/1-9/30) Australian Research Grant Council Fellowship, ANU/Newcastle (offered for year)

1990 (5/1-6/30) Visitor at Technion (during term of specialization on Nonlinear Analysis)

1991 (4/1-5/30) French National Fellowship, Limoges, Prof Invité

1991–93 Professor, Dept of Combinatorics and Optimization, Waterloo on leave from Dalhousie.
1993/06–98/09 Shrum Professor of Science, Department of Mathematics and Statistics, Simon Fraser University
1993–96 Adjunct Professor, Department of Mathematics, Statistics and Computing, Dalhousie
1994–2006 Associate Member, School of Computer Science, Simon Fraser University
1994–2000 Member, Institute for Applied Algorithms & Optimization, Simon Fraser University
1998– Gordon M. Shrum Professor of Science, Departments of Mathematics and Statistics, Simon Fraser University.
2001–03/12 Canada Research Chair in Information Technology at Simon Fraser University.
2002–03/11 Distinguished NewMIC Fellow, New Media Innovation Centre, Vancouver.
2004/01–2009/12 Distinguished Research Adjunct Professor, Department of Mathematics, Simon Fraser University.
2004/01– Research Professor, Faculty of Computer Science, Dalhousie University.
2004–2011 Canada Research Chair in Collaborative Technology at Dalhousie University.

3.1 Relevant professional activities (since 1984)

1984–88 Member, Board of the Canadian Mathematics Society
1985–88 Member, Research Committee of the CMS
1987–88 Chair, Constitution Revision Committee of the CMS
1988–91 Member, NSERC Mathematics Grant Selection Committee
1989–91 Chairman, NSERC Mathematics Grant Selection Committee
1989–93 Member, Steering Committee Centre for Mathematical Research, Montreal
1991 Member, Committee on the Presidential Appointment, Dalhousie
1991–93 Appraisals Committee, Ontario Council on Graduate Studies
1992–96 Member, NSERC Committee on Collaborative Research Initiatives
1992–96 MAA Panel of Visiting Lecturers
1992– Member, Simon Fraser Centre for System Science
1993– Member, Simon Fraser University Research Council
1993–2002/06 Director, Simon Fraser Centre for Experimental and Constructive Mathematics
1994–98 British Columbia Rhodes Scholarship Selection Committee
1995–98 Member, CMS Electronic Services Committee
1995–99 Member, CMS Board
1995–97 Chair, CMS Electronic Services Committee
1995 Member, NSF Scientific Computing Research Environments for the Mathematical Sciences (SCREMS) Panel, April
1995–97 Member, Mathematics Liaison Committee with NSERC
1995–96 Co-chair Executive of the Pacific Institute for the Mathematical Sciences
1996–99 Steering Committee, Simon Fraser Centre for System Science
1996 Simon Fraser member SCBC/BCHRF Health Technology Assessment competition
1996–97 HPCnet (High Performance Computing) Executive Committee
1996–99 Academy of Science, Simon Fraser Representative, Royal Society of Canada
1997, 1998 Canadian Representative, NATO Advisory Panel on Collaborative Research Grants
1997– Member, Scientific Committee, FONDAP in Applied Mathematics (FMA), CONICYT (Chilean Science Foundation)
1997–2003 Member Advisory Board for the Canada Institute for Scientific and Technical Information (CISTI) of the National Research Council of Canada

1997–98 CMS Representative to Virtuoso, Industry Canada’s Virtual Centre for On-line Scholarly Publishing
1997– Canadian Computational Initiative (c3.ca) Executive Committee (1997–98); National Board (1998–2005).
1998–2000 Member, Royal Society of Canada’s Public Awareness of Science Committee.
1998 Chair, NATO Advisory Panel on Collaborative Research Grants
1998– Selection Committee of the Royal Society for the McNeil Medal for the Public Awareness of Science.
1998–99 Dean of Science Search Committee, Simon Fraser University.
1998–02 Member, International Mathematical Union (IMU) Executive’s Committee on Electronic Information and Communication (CEIC); Deputy chair 2000–02.
1999, 2000 Member, NATO Physical Science & Engineering and Technology Panel
1999–00 President Elect Canadian Mathematical Society and CMS representative to AMS Council
1999–00 Presidential Search Committee, Simon Fraser University
April–May 2000 Member, Review Panel, Mathematics and Statistics Department, University of Western Australia.
2000–02 President Canadian Mathematical Society; CMS representative to AMS Council and Fields Institute Board
2000–02 Member College of Reviewers, Canada Research Chairs (CRC) Program
2000– Founding Member, SFU Institute for Health Research and Education (IHRE)
2001–03 Chair, Advisory Board for the Canada Institute for Scientific and Technical Information (CISTI) of the National Research Council of Canada
2002–03 Past President Canadian Mathematical Society
2002–06 Chair, International Mathematical Union (IMU) Executive’s Committee on Electronic Information and Communication (CEIC)
2003 Member, C3.ca Association Inc Long Range Plan Advisory Committee
2000–05 Member, WestGrid Executive Committee, Chair 2003-04.
2003–04 Dean of Science Search Committee, Simon Fraser University.
2004–07 Chair, CMS International Affairs Committee
2004–07 Mathematical Association of America Board of Governors, Governor at Large representing Canadians.
2004–07 Member, Killam Selection Committee
2004–07 Associate Publisher, Books and New Media, Canadian Mathematical Society

3.2 Relevant industrial/research activities (since 1995)

1995-2002 Project Leader, *Multi-modal Mathematics Project* within the *Telelearning National Centre of Excellence* (TL–RN).
1996- Co-founder and Member Board of Directors, *MathResources Inc.*, 5516 Spring Garden Road, Suite 203, Halifax N.S., B3J 1G6. (<http://www.mathresources.com>)
 [A company building CD, web-based and hand-held computer interactive mathematical tools, texts and scientific databases]
1996- Co-founder, *Neologos Technologies Ltd*, Burnaby, BC.
 [A, now moribund, company developing web based interactive collaborative tools.]
1999-2003 *Symbolic Analysis Project* within the *Mathematics of Information Technology and Complex Systems National Centre of Excellence* (MITACS).
2000-2003 Director, *HPC@SFU* Simon Fraser High Performance Computer Installation (CFI).

2002-2004 Project Leader. Nato Collaborative Linkage Grant with France (M. Thera, co-PI) and Bulgaria (J. Revalski, co-PI) on monotone operators and applications.

2002-2005 Co-Project Leader, WestGrid (CFI)

Other major externally funded Research Projects involve HPC (funded by SUN, SGI CFI/KDF: I am Project leader for HPC@SFU (1.875 million (2001-2004)), for CoLab (500K, CFI 2002), co-PL for WestGrid (34 million, 2002-2005), advanced publishing research (ApuRL: \$75,000 from SSHRC 1999-20001, and Heritage Canada), co-Pi (Math Learning Object, 50K SSHRC INE, 2002), SFU-CoLab (\$490,000 from CFI, 2001) and medical imaging (SPECT with VGH).

3.3 Editorial duties (since 1989)

1989-90 Consulting Editor for Mathematics, *The Guinness Encyclopaedia*

1990-98 Editor, with P. Borwein, *CMS-Wiley Series of Monographs and Advanced Texts*

1992- Associate Editor, *Set-Valued Analysis*, Kluwer Academic Publishers

1992- Area Editor, *Dictionary of Theories* (Gale Research, June 1993; ISBN: 1873477058)

1993- Editorial Board, *Journal of Convex Analysis*, Heldermann-Verlag

1994- Associate Editor, *ZOR: Mathematical Methods of Operations Research*

1994- Editorial Board, Honorary Editor, *Communications in Applied Nonlinear Analysis*

1995- Editorial Board, *Ramanujan Journal*

1996- Editorial Board, *Experimental Mathematics*

1997 Co-Editor, *MapleTech*, 4,1997, Special Issue on *Maple in the Mathematical Sciences*.

1997- Editorial Board, *Mathematical Inequalities and Applications (MIA)*

1998- Editor, with P. Borwein, *Springer-Verlag Canadian Mathematical Society Books in Mathematics*

1998-2001 Editorial Board, *International Journal of Mathematics and Mathematical Sciences*

1998- Editorial Board, *International Journal of Nonlinear and Convex Analysis*

1998- Editorial Board, *Proceedings of the American Mathematical Society*

1999- Editorial Board, *SIAM Problems and Solutions* (Electronic: <http://www.siam.org/journals/problems/>)

1999- Editorial Board, *Journal of Inequalities in Pure and Applied Mathematics* (Electronic: <http://jipam.vu.edu.au/>)

2003- Editorial Board, *Fixed Point Theory and Applications*

3.4 Conference organization (outside CECM since 1993)

1993 Co-organizer, with A. Lewis, Workshop on Convexity, Monotonicity and Differentiability, Fields Institute, March 5-7.

1995 Member, International Scientific Advisory Committee for International Conference on Interaction between Order, Convexity and Model Theory in Analysis. North Ossetian State University, Vladikavkaz, Russia, June 1995.

1995 Co-organizer, with P. Borwein, Special Session on Experimental Mathematics, CMS Winter Meeting Simon Fraser, Dec. 9-11.

1995 Co-organizer, with P. Borwein, Workshop on Organic Mathematics, CECM and CRM, Simon Fraser, Dec. 12-14.

1996 Organizing Committee, SIAM Meeting on Optimization, Victoria, May 20-22.

1996 Organizing Committee, Fields Workshop on Homotopy Methods, SFU, May 23-25.

1997 Organizing Committee, Scholarly Communication in the Next Millennium, Simon Fraser (Harbour Centre), March 5-8.

1997 International Committee, IV Caribbean Conference on Approximation and Optimization, Caracas, March 17-21.

1998 Scientific Committee, Sixth Canadian Number Theory Conference, University of Manitoba, July.
1999 Co-organizer, Future of Mathematical Communication 1999, MSRI, Berkeley, December 1-5.
2000 Co-organizer, Multimedia Tools for Communicating Mathematics, (CMAF/UL), Lisbon, November 23-25, 2000.
2001 International Scientific Committee, Second International Conference on Nonlinear and Convex Analysis, Hirosaki City, Japan, July 28-Aug 1, 2001.
2001 Program Committee, First International Workshop on Mathematical Knowledge Management RISC Linz, Austria, September 24-26, 2001.
2002 Organizer, Fourth Annual Meeting and Workshop (*Managing the Digital Literature*) of the CEIC, Wosk Centre for Dialogue, February 15–17, 2002.
2002 Scientific Committee, ICM Satellite Meeting on (*Electronic Information and Communication*), Beijing, August 29–31, 2002.
2002 Scientific Committee, ICM (*CEIC Afternoon*), Beijing, August 26, 2002.
2003 Organizer, ICIAM 2003 Minisymposium on *Advanced Collaborative and Visualization Environments*, Sydney, July 7-11, 2003.
2004 Chair Scientific Committee, Formal Power Series and Algebraic Combinatorics: an International Combinatorics Conference (*FPSAC 2004*), Vancouver, June 28–July 2, 2004.
2004 Co-organizer, First Experimental Mathematics Workshop, Oakland, March 29–30, 2004.

3.5 Science citation index information up to 1999

Approximate number of annual citations (1990-99):

1990: 45 1991: 50 1992: 50 1993: 60 1994: 80 1995: 80 1996: 90 1997: 100 1998: 120 1999 :
130

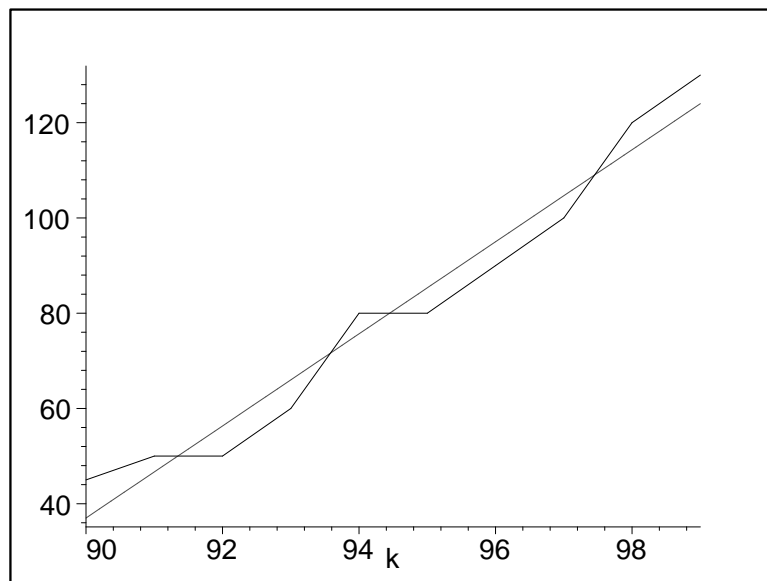


Figure 1: Citations over Decade — Least Square Fit

Highly Cited Researchers Database (ISI) <http://isihighlycited.com>,

May 2002.

Representative well cited works: (August 2000/02)

1. “Proper efficient points for maximizations with respect to cones”, *SIAM J. Control Optim.*, **15** (1977), 57–63. [91]
2. “The Geometry of Pareto optimality,” *Math. Operationsforschung*, **11** (1980), 235–248. [51]
3. “Continuity and differentiability properties of convex operators,” *Proc LMS*, **44** (1982), 420–444. [43]
4. “On the existence of Pareto efficient points,” *Math Oper. Res.*, **8** (1983), 64–73. [65]
5. “The arithmetic-geometric mean and fast computation of elementary functions,” *SIAM Review*, **26**, (1984) 351–366. (with P. Borwein) [27]
6. “Convergence of lattice sums and Madelung’s constant,” *J. Math. Phys.*, **26** (1985), 2999–3009. (with D. Borwein, K. Taylor) [26]
7. “Stability and regular points of inequality systems,” *J. Optim. Theory App.*, **48** (1986), 9–52. [72]
8. “Proximal analysis and boundaries of closed-sets in Banach space: 1, II,” *Can J Math*, **38(39)** (1986(87)), 431-452 (428-472). (with H. Strojwas) [67]
9. Pi and the AGM, John Wiley (1987). (with P. Borwein) [147]
10. “A smooth variational principle with applications to subdifferentiability and to differentiability of convex functions,” *Trans AMS*, **303** (1987), 517-527. (with D. Preiss) [76]
11. “Nonsmooth calculus in finite dimensions,” *SIAM J. Control Optim.*, **25** (1987), 1312–1340. (with D. Ward) [32]
12. “Verifiable necessary and sufficient conditions for openness and regularity of set-valued and single-valued maps,” *JMAA*, **134** (1988), 441–459. (with D. Zhuang) [36]
13. “Mosco convergence and reflexivity,” *Proc. Amer. Math. Soc.*, **109** (1990), 427–436. (with G. Beer) [24]
14. “A cubic counterpart of Jacobi’s identity and the AGM,” *Trans. Amer. Math. Soc.*, **323** (1991), 691–701. (with P. Borwein) [32]
15. “Duality relationships for entropy-like minimization problems,” *SIAM J. Control and Optim.*, **29** (1991), 325–338. (with A. Lewis) [28]
16. “Partially-finite convex programming, (I),” *Mathematical Programming, Series B*, **57**, (1992) 15–48. (with A. Lewis) [32]
17. “Partially-finite convex programming in L^1 : entropy maximization,” *SIAM J. Optimization*, **3** (1993), 248—267. (with A. Lewis) [20]
18. ”Super-efficient points in vector optimization,” *Trans. Amer. Math. Soc.* **338** (1993), 105–122. (with D. Zhuang) [27]
19. “On projection algorithms for solving convex feasibility problems,” *SIAM Review*, **38** (1996), 367–426. (with H. Bauschke) [58]

4 Graduate students

- M.Sc., B. Toulany (1977)* Thesis title: “Disjunctive Programming,” Dalhousie
- M.Sc., D.E. Ward (1981)* Degree by Examination, Carnegie Mellon
- M.Sc., R. Merkovsky (1981)* Degree by Examination, Carnegie Mellon
- M.Sc., H.M. Strojwas (1984)* Degree by Examination, Carnegie Mellon
- M.Sc., D. Zhuang (1984)* Thesis title: “Minimax Theorems,” Dalhousie
- M.Sc., D. Hughes (1984)* Thesis title: “Computation of Pi,” Dalhousie
- Ph.D., D.E. Ward (1984)* Thesis title: “Tangent Cones, Generalized Subdifferentials, and Optimization,” Dalhousie. Now Tenured Associate Professor, Miami University of Ohio.
- Ph.D., H.M. Strojwas (1986)* Thesis title: “Tangential Approximations,” Carnegie Mellon¹
- Ph.D., D. Zhuang (1989)* Thesis title: “Regularity and Maximality Properties of Set Valued Structures in Optimization,” Dalhousie [awarded the 1988 CAMS prize for best Canadian Applied Mathematics Thesis]. Tenured Associate Professor, Mount Saint Vincent University: Sept 1998, Researcher, IBM Development Lab, Toronto.
- Ph.D., W. Huang (1993)* Thesis title: “Sequential convex programs: convergence and algorithms,” Dalhousie. Now Tenured Associate Professor, Lakehead University.
- M.Sc., Xianfu Wang (Shawn) (1995)* Thesis title: “Pathological examples of Lipschitz functions,” SFU
- Ph.D., H. Bauschke (1996)* Thesis title: “Projection Methods and Monotone Operators” [awarded 1996 NSERC Postdoctoral Fellowship, and the *Governor General’s Gold Medal* for SFU]. Tenured Assistant Professor at Guelph, 2001-.
- M.Sc., Erick Wong (1997)* Thesis title: “Computation on Normal Families of Primes,” SFU.
- M.Sc., K. Hare (1999)* Thesis title: “Multisectioning, Rational Poly-exponential Functions and Parallel Computation,” SFU [CECM Report, 99:132].
- Ph.D., Xianfu Wang (Shawn) (1999)* Thesis title: “Fine and Pathological Properties of Subdifferentials in Finite and Infinite Dimensions,” [Awarded 1999 NSERC Postdoctoral Fellowship], SFU. [CECM Report, 99:134]. SFU Nominee for NSERC 2000 Doctoral Prize in the Sciences. Assistant Professor at Kelowna, 2001-.
- M.Sc., Mason Macklem (2002)* Thesis title: “Multidimensional Modelling of Image Fidelity Measures,” SFU.
- M.Sc., Herre Wiersma (2002)* Thesis title: “Duality Inequalities in Nonsmooth Optimization,” SFU.
- M.Sc., Tara Stuckless (2003)* Thesis title: “Brouwer’s Fixed Point Theorem: Methods of Proof and Generalizations,” SFU.
- M.Sc., Terry Stanway (2003)* Thesis title: “A Framework for Mathematical Knowledge Management,” SFU.

4.1 Post doctoral fellows & associates (supported or directed since 1986)

- 1986–88** Marc Teboulle (Technion, Optimization, NSERC). Now Tenured Associate Professor, Tel Aviv.
- 1987–89** Adrian Lewis (Cambridge, Optimization, NSERC). Now Tenured Associate Professor, Waterloo.
- 1989–91** Lou Shi To (Illinois, Number Theory, Killam Fellow). Now Sessional Lecturer, Halifax.
- 1990–91** Dominikus Noll (Stuttgart, Functional Analysis, NSERC/Germany). Now on Faculty at Université de Toulouse.

¹K. Kokanee, formal supervisor

1990–91 Zhuang Yadong (Yangzhou, Functional Analysis, AUCC)

1991 Frank Garvan (Penn State, Number Theory, NSERC Internat. Fellow). Now Associate Professor, University of Florida.

1991–92 Mark Limber (Colorado, Approximation, NSERC)

1992–94 Jon Vanderwerff (Alberta, Functional Analysis, NSERC(National) PDF). Now Assistant Professor, La Sierra, California.

1993–94 Roland Girgensohn (Clausthel, Classical Analysis, Germany). Now obtaining Habilitation in Munich.

1993–94 Jim Zhu (North Eastern, Control Theory, Shrum Chair PDF) Now Tenured Associate Professor, Western Michigan University.

1993–95 Sheldon Parnes(Temple, Computational Analysis, CECM PDF). Then Software Engineer, Auto-trol Technology Corporation, Boulder Colorado.

1993–94 Mark Limber (Colorado, Approximation, NSERC PDF). Was Senior Software Engineer, Auto-desk Corporation. Now at Design Variations, Inc. Boulder Colorado.

1993–94 Martha Limber (Colorado, Dynamical Systems, NSERC PDF). Now System Scientist II, National Centre for Atmospheric Research, Boulder Colorado.

1994–95 Warren Moors (Auckland, Functional Analysis, private/NSERC). Now University Lecturer, Waikato, New Zealand. (Recipient *New Zealand Mathematical Society Research Award* for “outstanding published research over the last 5 years”, 2001.)

1994–96 Chris Pinner (Texas, Number Theory, Shrum Chair/UBC PDF). Now Assistant Professor, Kansas State.

1995 (Jan-June) WeiWei Sun (Windsor, Numerical Analysis, Shrum Chair PDF, PT)

1995–96 John Read (Darmstadt, Optimization, NSERC PDF/Waterloo), now Software Engineer, Lucent Technologies.

1995–97 David Bradley (Urbana, Number Theory, NSERC (National) PDF). Now Assistant Professor, University of Maine.

1996–97 Yongheng Shao (Wayne State, Control & Optimization, Shrum Chair/UBC PDF). Now Scientific Software Engineer, Engineering Technology Associates, Madison Heights, Michigan.

1996–00 Petr Lisonek (Linz, Discrete Mathematics, NSERC PDF, PImS PDF, Mitacs RA). Now Assistant Professor at SFU.

1997–98 Ping Zhou (Capetown, Approximation, NSERC PDF). Now Womans Faculty Award holder at St Francis Xavier.

1997–99 Yves Lucet (Toulouse, Convex Optimization, PImS PDF/SFU-UofA-UVic). Now Assistant Professor at Univ of the Okanagan.

1997–99 Pierre Maréchal (Toulouse, Medical Imaging, PImS/Vancouver Hospital PDF). Now Faculty Member, Montpellier.

1999–00 Madhu Nayakkankuppam, (Courant Institute Optimization, PImS PDF/SFU-UBC). Now Assistant Professor at University of Maryland, Baltimore County.

1999–01 Ivaylo Kortezov (Sofia, Functional Analysis, NATO-NSERC PDF). Now Lecturer in the Institute of Mathematics and Informatics, Bulgarian Academy of Sciences, Sofia.

2000–02 Rafal Goebel (University of Washington, Optimization and Control, NSERC/SFU-UBC PDF)

2001–03 Lyn Bartram (Simon Fraser University, Human Computer Interfaces, NSERC IRF)

2001–03 Will Galway (University of Illinois, Computational Number Theory, PImS/HPC PDF)

2002–03 Hristo Sendov (University of Waterloo, Optimization and Nonlinear Analysis, NSERC PDF)

2002–04 Robert Scharein (University of British Columbia Knot Theory and Computer Graphics, CRC/HPC PDF)

2002–04 Russell Luke (University of Washington, Optimization and Numerical Analysis, PImS/HPC PDF)

4.2 NSERC foreign scientist visitors

1992–93 Dominikus Noll (Stuttgart, Functional Analysis, Sept 92-Mar 93)

1993–94 Simon Fitzpatrick (W. Australia, Functional Analysis, August 93-Jan 94)

1996–97 Boris Mordukhovich (Wayne State, Optimization and Control, May-Dec 96 (periods))

5 Refereed journal publications (& papers in press)

1. D. Borwein, J. Borwein, R. Crandall and R. Mayer, “On the dynamics of certain recurrence relations,” *Ramanujan Journal* (Special issue for Richard Askey’s 70th birthday), accepted June 2004. [CoLab Preprint 253]
2. J.M. Borwein and K. Karamanos, ‘Algebraic dynamics of certain Gamma function values,’ *Generalized Convexity and Generalized Monotonicity*, accepted March 2004. [CoLab Preprint 256]
3. David Bailey, Jonathan Borwein, Richard Crandall and Carl Pomerance, “On the binary expansions of algebraic numbers,” *J. Number Theory Bordeaux*, accepted July 2003. [CECM Preprint 2003:204]

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4. J.M. Borwein, “The Experimental Mathematician: The Pleasure of Discovery and the Role of Proof,” *International Journal of Computers for Mathematical Learning*, accepted, subject to revisions, April 2002. [CECM Preprint 02:178]. Counterpart presentation (<http://www.cecm.sfu.ca/personal/j>) published in *CMESG25 Proceedings*, 2002.

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5. D. Borwein, J. M. Borwein, and W. F. Galway, “Finding and Excluding b -ary Machin-Type BBP Formulae,” *Canadian J. Math.* Galleys June 2004. [CECM Preprint 2003:195]
 6. Jonathan Borwein and Richard Crandall, “On the Ramanujan AGM fraction. Part II: the Complex-parameter Case,” *Experimental Mathematics*. Galleys May 2004. [CECM Preprint 2003:214]
 7. Jonathan Borwein, Richard Crandall and Greg Fee, “On the Ramanujan AGM fraction. Part I: the Real-parameter Case,” *Experimental Mathematics*. Galleys May 2004. [CECM Preprint 2003:208/213]

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8. Jonathan Borwein, Lixin Cheng, Marián Fabian, and Julian P. Revalski, “A one perturbation variational principle with applications,” *Set Valued Analysis*. **12** (1-2), 49–60, March, 2004 - June, 2004. [CECM Preprint 2003:205]
 9. Jonathan M. Borwein and Jon D. Vanderwerff, “Constructible convex sets,” *Set Valued Analysis*. **12** (1-2), 61–77, March, 2004 - June, 2004. [CECM Preprint 2003:202]

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10. J.M. Borwein, R. Choksi and P. Maréchal, “Probability distributions of assets inferred from option prices via the Principle of Maximum Entropy,” *SIAM J. Optimization*, **4** (2003), 464–478. [CECM Preprint 02:176].

11. J.M. Borwein, J.V. Burke and A.S. Lewis, “Differentiability properties of cone monotone functions on separable Banach space,” *Proc Amer. Math. Soc.*, bf 132 (2003), 1067–1076. [CECM Preprint 02:183].
 12. J.M. Borwein and R. Girgensohn, “A class of exponential inequalities,” *Mathematical Inequalities and Applications*, **6** (2003), 397–411. [CECM Preprint 01:174].
 13. Jonathan M. Borwein and Xianfu Wang, “Lipschitz functions on the line with prescribed Hölder subdifferentials,” *Advan. Stud. Contemp. Math*, **7** (2003), 93–117.
 14. Jonathan Borwein and Kwok-Kwong Stephen Choi, “On Dirichlet series for sums of squares,” *Ramanujan Journal*, special issue for Robert Rankin, **7**, (2003), 95–128. [CECM Preprint 01:167].
 15. J.M. Borwein, S.P. Fitzpatrick and R. Girgensohn, “Subdifferentials whose graphs are not bounded \times weak-star closed,” *Canadian Math. Bulletin*, **46** (2003), 538–545. [CECM Preprint 01:175].
 16. Heinz H. Bauschke, Jonathan M. Borwein and Patrick L. Combettes, “Bregman monotone optimization algorithms,” *SIAM J. Control and Optimization*, **42** (2003), 596–636. [CECM Preprint 02:184].
 17. J.M. Borwein and A.L. Donchev, “On the Bartle-Graves Theorem,” *Proc Amer. Math. Soc.*, **131** (2003), 2553–2560. [CECM Preprint 02:185].
 18. J.M. Borwein, J. Vanderwerff and Xianfu Wang, “Local Lipschitz constants and maximal subdifferentials,” *Set-valued Analysis*, **11** (2003), 37–67. [CECM Preprint 01:158].
 19. J.M. Borwein and R. Goebel, “Notions of Relative Interior in Banach spaces,” special issue on Optimization, *Journal of Mathematical Sciences* (Plenum, Moscow). **115** (2003), 2542–2553. [CECM Preprint: 01:162].
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20. Joël Benoist, Jonathan Borwein and Nicolae Popovic, “A Characterization of Quasiconvex Vector-Valued Functions,” *Proc Amer. Math. Soc.*, **131** (2002), 1109–1113. [CECM Preprint 01:170].
 21. J.M. Borwein, M. Fabian and P.D. Loewen, “The shape of the range of the gradient of a C^1 smooth bump in infinite dimensions,” *Israel J. Math*, **132** (2002), 239–251. [CECM Preprint 01:169].
 22. David Borwein, Jonathan Borwein and Bernard Mares, “Multi-variable sinc integrals and volumes of polyhedra,” *The Ramanujan Journal*, **6** (2002), 189–208. [CECM Preprint: 01:159].
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 Foreign editions: Chinese (Owl Publishing) 1995, ISBN 957-0337-14-1. Indonesian (Erlanga Penerbit) signed 1995. Italian (Gremese Editore) 1995, ISBN 88-7605-813-3. Arabic (Academia International) 1991.
Interactive CD version, January 1997 (<http://www.mathresources.com>). (MathResource: Awarded 1997 *Eddie* for best post-secondary reference software, by *Education Software Review*. ISBN: 3-540-14650-4, Springer-Verlag. School version: MathProbe *Media&Methods 1998 Awards Portfolio* winner. LetsDoMath, 2000 *Technology&Learning Award* Winner. 2003, now integrated with *MapleSoft* help files in Maple 9.5. Related software at www.mathresources.com and www.letsdomath.com.)
12. J.M. Borwein and P. B. Borwein, *Pi and the AGM: A Study in Analytic Number Theory and Computational Complexity*, 414 and xv pp.(John Wiley, New York, 1987, reprinted 1988, 1996, Chinese edition 1995, paperback 1998: ISBN 0-471-31515-X.) (2,000 sold 31/08/99, paperback 453 sold, 31/02/2003)

8 Book and other reviews

1. *Featured Mathematical Review* (1997), MR 97h:33034 of: Berndt, Bruce C., Bhargharva, S. and Garvan, Frank G., "Ramanujan's theories of elliptic functions to alternative bases," *Trans. Amer. Math. Soc.* **347** (1995), 4163–4124. (With D. Bradley)
2. *An Encyclopedia of Sequences*, N. Sloane and S. Plouffe, in *SIAM REVIEW*, **38**, (1996), 333–337. (With R. Corless)
3. *Pi in the sky: counting, thinking and being*, John Barrow, in *Science*, (March 26, 1993). (With P. Borwein)
4. *Set-Valued Analysis*, J-P. Aubin and H. Frankowska, in *Bull. AMS*, **26**, (1992), 157–160.
5. *The man who knew infinity: a life of the Indian genius Ramanujan*, Robert Kanigel, in *Science*, (July 19, 1991). (With P. Borwein)
6. *Generalized Concavity*, M. Avriel, W. Diewert, S. Schaible, and I. Zang, in *SIAM REVIEW*, **32** (1990), 689–690.

9 Works submitted (prior to final acceptance)

1. J.M. Borwein and Qiji Zhu, "Variational methods in convex analysis," submitted *Global Optimization*, special issue in honour of Alex Rubinov's 65th birthday (2005). [CoLab Preprint 259]
 2. J.M. Borwein, I. J. Zucker and J. Boersma, "The evaluation of character Euler double sums," submitted *Proc. Edin Math. Soc.*, May 2004. [CoLab Preprint 260]
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3. J. M. Borwein, and R. Girgensohn, "Evaluations of Binomial Series," submitted *Aequationes Math.*, December 2003. [CECM Preprint 02:188]
 4. J. M. Borwein and Xianfu Wang, "Cone monotone functions: differentiability and continuity," submitted *Canadian J. Math*, June 2003. [CECM Preprint 2003:209]
 5. J.M. Borwein, Stephen Choi, and W. Pigulla, "Continued fractions of tails of series," submitted *American Mathematical Monthly*, February 2003. [CECM Preprint 2003:201]

10 Works in preparation

1. J.M. Borwein and D.R. Luke, "Dynamics of generalizations of the AGM continued fraction of Ramanujan." Preprint, May, 2004.
2. D.H. Bailey, J.M Borwein and V Kapoor, "Ten symbolic problems: a challenge", in preparation *MAA Monthly* May 2004.

11 Unpublished manuscripts

1. L. Berggren, J. Borwein and P. Borwein, *A Pamphlet on Pi*, June 2003, [CECM Preprint 2003:210].
2. J.M. Borwein, R.K. Goodrich and M.A. Limber, “A comparison of entropies in the underdetermined moment problem,” preprint, May 1993.
3. J.M. Borwein, M. Fabian and J. Vanderwerff, “Locally Lipschitz functions and bornological derivatives,” Nov. 1993. [CECM Research Report 93:012].
4. J.M. Borwein, P.B. Borwein, R. Girgensohn and S. Parnes, “Mathematical Experimentation and Methodology,” January 1995.
5. H.H. Bauschke and J.M. Borwein, “Continuous linear monotone mappings in Banach space,” August 1995. [CECM Research Report 95:049].
6. J.M. Borwein and S. Fitzpatrick, “Closed convex Haar null sets,” August 1995. [CECM Research Report 95:052].
7. Jonathan M. Borwein, Jay Treiman and Qiji Zhu, “Sensitivity analysis in reflexive Banach spaces,” preprint, August 1997.
8. J. M. Borwein and D. J. Broadhurst, “Determinations of rational Dedekind-zeta invariants of hyperbolic manifolds and Feynman knots and links,” November 1998. [CECM Preprint 98:120]. [hep-th/9811173]

12 External invited lectures and presentations (since 1986)

12.1 1986 July–

1. **August 5th** “Cones, minimality notions and consequences,” International conference on Vector Optimization, Darmstadt.
2. **November 17th** “A smooth variational principle,” Computer Science/Optimization Seminary, University of Waterloo.
3. **November 24th** “Ramanujan, modular equations and pi,” Colloquium, St. Francis Xavier.

12.2 1987

1. **January 22nd** “A smooth variational principle,” AMS Winter meetings, San Antonio
2. **March 19th** “Ramanujan, modular equations and pi,” Colloquium, Concordia
3. **March 24th** “Order complementarity,” Colloquium, University of Western Ontario
4. **March 26th** “A smooth variational principle,” Analysis/Applied Math seminar, University of Toronto.
5. **June 1st** “Ramanujan, modular equations and approximations to pi,” Ramanujan Centenary Meeting, University of Illinois.

6. **June 25th** “A smooth variational principle,” Franco-Quebec Conference on Non-linear Analysis, Perpignan.
7. **July 21st** “A theta identity of Ramanujan’s and applications,” AMS Summer Research Institute, Bowdoin College, Maine.
8. **October 15th** “Spectral analysis via convex programming,” Charnes’ 70th birthday conference, IC2, University of Texas at Austin.
9. **December 15th** “The arithmetic-geometric mean of Gauss and Legendre: An Excursion,” Canadian Mathematical Society, Coxeter-James Lecture, Vancouver.

12.3 1988

1. **January 6th** “Partially-finite convex programming,” AMS Winter Meetings, Atlanta.
2. **May 12th** “Ekeland’s theorem and its extensions,” Distinguished Lecturer Series, University of Delaware.
3. **May 13th** “The arithmetic-geometric mean of Gauss and Legendre: An Excursion,” Distinguished Lecturer Series, University of Delaware.
4. **June 14th** “The arithmetic-geometric mean of Gauss and Legendre: An Excursion,” Colloquium, University of Newcastle, Australia.
5. **June 27th** “The arithmetic-geometric mean of Gauss and Legendre: An Excursion,” Colloquium, University of New England, Armidale, Australia.
6. **June 29th** “Ekeland’s theorem and its extensions,” Colloquium, University of New England, Armidale, Australia.
7. **July 27th** “The arithmetic-geometric mean of Gauss and Legendre: An Excursion,” Colloquium, Auckland University, New Zealand.
8. **August 1st** “Ekeland’s theorem and its extensions,” Colloquium, Melbourne University, Australia.
9. **August 9th** “Open problems on the existence of nearest points,” Workshop on Functional Analysis and Optimization, Australian National University, Canberra.
10. **August 17th** “Subderivatives and their applications,” Conference on Functionl Analysis and Optimization, Australian National University, Canberra.
11. **August 24th** “Mosco convergence and the Kadec property,” Workshop on Functional Analysis and Optimization, Australian National University, Canberra.
12. **Sept 9th** “Subderivatives and their applications,” Joint Colloquium, University of New South Wales and Sidney University.
13. **Sept 12th** “The arithmetic-geometric mean of Gauss and Legendre: An Excursion,” Colloquium, Macquarie University, Sydney.
14. **Sept 14th** “Borchardt’s four-dimensional arithmetic-geometric mean,” Seminar, Macquarie University, Sydney.

12.4 1989

1. **Feb 8th** “The calculation of pi. How, why, what?” Nova Scotia Institute of Science, Halifax.
2. **Mar 4th** “Quadratic Mean Iterations,” Carleton University/Universit d’Ottawa joint Colloquium, Carleton University, Ottawa.
3. **April 12th** “Quadratic Mean Iterations,” Seminar, Rutger’s University, New Brunswick New Jersey.
4. **April 14th** “Pi and the arithmetic-geometric mean,” Colloquium, Rutger’s University, New Brunswick, New Jersey.
5. **May 12th** “APICS/FRASER medal presentation talk,” Dalhousie, Halifax.
6. **June 9th** “Minimal CUSCOS and their applications,” Plenary talk, Conference on Fixed Point Theory, CIRM, Marseille.
7. **June 12th** “Minimal CUSCOS and Preisses theorem,” Miniconference on Optimization Theory, University of Pau, France.
8. **Oct 17th** “Semi-finite convex programming,” ORSA/TIMS National Meeting, New York (presented by A. Lewis).
9. **November 30th** “Pi, Euler, Ramanujan, and MAPLE”, Colloquium, Department of Computer Science, University of Manitoba.

12.5 1990

1. **Jan 19th** “Minimal CUSCOS and applications to Lipschitz functions,” AMS Winter Meetings, Louisville.
2. **Jan 22nd** “Pi, Euler, Ramanujan, and MAPLE”, APICS Lecture, Mount St Vincent University.
3. **Jan 26th** “Pi, Euler, Ramanujan, and MAPLE”, APICS Lecture, Mount Allison University.
4. **March 15th** “Pi, Euler, Ramanujan, and MAPLE”, APICS Lecture, University College of Cape Breton.
5. **March 16th** “The history of the computation of PI”, APICS Lecture, University of Prince Edward Island.
6. **March 23rd** “Pi, Euler, Ramanujan, and MAPLE”, APICS Lecture, Acadia University.
7. **March 24th** “The history of the computation of PI”, APICS Lecture, St. Francis Xavier University.
8. **March 31st** “The history of the computation of PI”, APICS Lecture, Memorial University.
9. **April 5th** “The history of the computation of PI”, APICS Lecture, Université de Moncton.
10. **April 6th** “Pi, Euler, Ramanujan, and MAPLE”, APICS Lecture, University of New Brunswick.
11. **April 20th** “Ekeland’s theorem and the smooth variational principle,” Conference on Topological Methods, Brock University.

12. **April 21st** “Differentiability properties of convex, Lipschitz and semicontinuous functions,” Ontario Math Meetings #88, Brock University.
13. **May 15th** “Differentiability properties of Lipschitz functions,” Nonlinear Analysis Seminar #1, Technion Israel.
14. **May 21st** ”Differentiability properties of lower semicontinuous functions,” Nonlinear Analysis Seminar #2, Technion Israel.
15. **May 24th** “A survey of differentiability properties of convex, Lipschitz and semicontinuous functions,” Seminar, Technion Israel.
16. **May 25th** “Minimal CUSCOS and applications to Lipschitz functions,” Nonlinear Analysis Seminar #3, Technion Israel.
17. **May 28th** “A survey of differentiability properties of convex, Lipschitz and semicontinuous functions,” Seminar, Ben Gurion University, Israel.
18. **June 15th** “Pi, Euler, Ramanujan, and MAPLE,” Seminar, Technion Israel.
19. **August 22nd** “Convex programming approaches to moment, curve, and signal estimation,” Miniconference on Optimization Theory, Dalhousie.
20. **November 21st** ”Convex programming and the choice of entropy in spectral estimation,” Seminar, Dept of Combinatorics and Optimization, Waterloo.
21. **December 6th** “Greek mathematics and the story of the circle,” Junior High presentation, Dalhousie.

12.6 1991

1. **January 25th** “Discovering analytic objects by computer,” Miniconference on Symbolic computation, Dalhousie.
2. **January 25th** “Discovering analytic objects by computer,” Miniconference on Symbolic computation, Dalhousie.
3. **March 13th** “Euler, Mahler, Ramanujan: Discovering analytic objects by computer,” Colloquium Pure Mathematics Department, Waterloo
4. **April 23rd** “Euler, Mahler, Ramanujan: Discovering analytic objects by computer,” Number Theory Seminar, Université de Limoges.
5. **April 25th** “Euler, Mahler, Ramanujan and a little Pi: Discovering analytic objects by computer.” One of two invited talks at the Festkolloquium for Dr. A. Peyerimhoff ’s 65th birthday, Ulm.
6. **April 29th** “A survey of differentiability properties of convex, Lipschitz and semicontinuous functions,” Colloquium, Universitat Stuttgart.
7. **May 15th** “Convex programming and the choice of entropy in spectral estimation.” First Plenary talk, Journées d’Optimization, Université de Limoges.

8. **May 17th** “A survey of differentiability properties of convex, Lipschitz and semicontinuous functions,” Optimization Seminar, Université de Limoges.
9. **May 21st** “Euler, Mahler, Ramanujan: Discovering analytic objects by computer,” Seminar Project Algorithms Group, INRIA, Paris.
10. **May 23rd** “A survey of differentiability properties of convex, Lipschitz and semicontinuous functions,” Analysis Seminar, Université de Paris VI.
11. **May 29th** “Convex programming and the choice of entropy in spectral estimation,” special session on Dynamic Optimization, CMS Summer Meeting, Université de Sherbrooke.
12. **June 5th** “On the generating function of $[na + b]$,” International Conference on Functional Equations, Acadia.
13. **June 27th** “Ramanujan: the wonderful life of the Indian mathematical genius S. Ramanujan (1887–1920),” Seminar, Faculty of Science, Simon Fraser University.
14. **June 28th** “Euler, Mahler, Ramanujan: Discovering analytic objects by computer,” Colloquium, Dept of Mathematics, Simon Fraser University.
15. **July 26th** “Ramanujan: the wonderful life of the Indian mathematical genius S. Ramanujan (1887–1920),” Colloquium, Combinatorics and Optimization, University of Waterloo.
16. **Oct 9th** “A survey of differentiability properties of convex, Lipschitz and semicontinuous functions,” Analysis Seminar, York University.
17. **Oct 26th** “Estimation and approximation using infinite dimensional convex programs with entropy type objectives,” Special session on Constrained Approximation, AMS Regional Meeting, University of North Dakota, Fargo.
18. **Nov 12th** “Discovering analytic objects by computer,” Colloquium, Dept of Mathematics, Guelph University.

12.7 1992

1. **Feb 6th** “Euler, Mahler, Ramanujan: Discovering analytic objects by computer,” Colloquium, Dept of Mathematics, York University.
2. **Feb 19th** “Estimation and approximation using infinite dimensional convex programs with entropy type objectives,” Colloquium, Industrial and Organizational Engineering, University of Michigan.
3. **Feb 20th** “Euler, Mahler, Ramanujan: Discovering analytic objects by computer,” Seminar, Dept of Mathematics, University of Michigan.
4. **April 9th** “Iterative methods for solving inverse problems and computing fixed points,” Colloquium, Dept of Mathematics, Statistics and Computing Science, Dalhousie University.
5. **April 23rd** “Iterative methods for solving inverse problems and computing fixed points,” Colloquium, Dept of Pure Mathematics, University of Western Ontario.
6. **May 2nd** “ Guided Computer Experimentation in Mathematics: Euler, Mahler, Ramanujan and Maple,” Harry H Gehman Lecture, MAA/OMM Meeting, Queens University, Kingston.

7. **May 16th** “First and second order differentiability of convex functions on various Banach spaces,” Variational Analysis and Related Topics, University of California at Davis.
8. **May 21st** “Infinite dimensional entropy minimization: a tutorial,” 14th Symposium on Mathematical Programming with Data Perturbations, George Washington University, Washington, D.C.
9. **May 22nd** “On the failure of ‘maximum entropy’ reconstruction for Fredholm operators and other infinite dimensional systems,” 14th Symposium on Mathematical Programming with Data Perturbations, George Washington University, Washington, D.C.
10. **June 15th** “A communications example: Maple and Pari,” Annual Maple Retreat, Sparrow Lake Ontario.
11. **Aug 20th** “First and second order differentiability of convex functions on various Banach spaces,” Variational Analysis and Related Topics, First World Congress of Nonlinear Analysts, Tampa Florida.
12. **Sept 4th** “Iterative methods for solving inverse problems and computing fixed points,” Third Franco-Latin American Conference on Applied Mathematics, Santiago Chile.

12.8 1993

1. **Feb 2nd** “First and second order differentiability of convex functions on various Banach spaces,” Colloquium, University of Western Ontario.
2. **Feb 3rd** “A history of the computation of Pi,” Undergraduate Colloquium, University of Western Ontario.
3. **Feb 12th** “An analyst’s approach to linear inequality systems,” Seminar, Dept. of Mathematics, University of Colorado.
4. **Feb 15th** “Computer assisted ‘Mathematics and Plausible Reasoning’,” Kempner Colloquium, Dept of Mathematics, University of Colorado.
5. **March 25th** “A history of the computation of Pi,” Colloquium, University of Vermont.
6. **April 8th** “Computer assisted ‘Mathematics and Plausible Reasoning’,” Colloquium, Dept. of Mathematics, Pennsylvania State University.
7. **May 1st** “First and second order differentiability of convex functions on various Banach spaces,” Regional Functional Analysis Conference, Miami University , Oxford, Ohio.
8. **May 7th** “Some intriguing series involving $\zeta(4)$,” Tutte Seminar, Dept of Combinatorics and Optimization, University of Waterloo.
9. **August 15th** “Means, iterations and experimentally induced identities,” MAA-CMS Invited Lecture, Joint AMS/MAA/CMS Summer Meetings, University of British Columbia, Vancouver.
10. **September 2nd** “Convex programming and entropy type functions,” Plenary Lecture, XVIII Symposium on Operations Research, University of Cologne.

11. **September 27th** “What is experimental Mathematics?,” Applied Mathematics Colloquium, University of British Columbia, Vancouver.
12. **October 9th** “Three examples of experimental computational analysis?,” Pacific Northwest Numerical Analysis Seminar, University of Washington, Seattle.
13. **October 16th** “S. Ramanujan: a Wonderful Life?,” South Asian Colloquium of the Pacific Northwest, Harbour Centre, Simon Fraser University.
14. **October 19th** “Shrum Inaugural Talk,” Harbour Centre, Simon Fraser University.

12.9 1994

1. **January 18th** “Nonsmooth analysis in smooth Banach spaces,” Colloquium, Department of Mathematics, University of Washington.
2. **March 3rd** “What is experimental Mathematics?,” Colloquium, University of California, Santa Barbara.
3. **March 4th** “Nonsmooth analysis in smooth Banach spaces,” Analysis Seminar, University of California, Santa Barbara.
4. **March 22nd** “What’s Experimental Mathematics?” Talk to Grade 12 Students Springbreak, SFU.
5. **April 11th** “Nonsmooth analysis in smooth Banach spaces,” Colloquium, University of Victoria.
6. **April 14th** “Greek Mathematics and Especially the Story of the Circle,” High School Science Evening, Simon Fraser University.
7. **April 23rd** “What is experimental Mathematics?,” Algorithms Seminar, Samedi de Recherche, University of Ottawa.
8. **June 27th** “Examples of convex functions and classification of normed spaces,” Plenary talk, VII Colloque Franco-Allemand d’Optimisation, Dijon.
9. **July 5th** “Nonsmooth analysis in smooth Banach spaces,” Colloquium, University of Limoges.
10. **August 11th** “Experimental mathematics, promises and pitfalls,” Maple Summer Workshop and Symposium, “Meeting of Maple Minds”, Plenary Talk, Rensselaer, New York.
11. **August 11th** “The vision: how do we integrate...mature computation techniques,” Maple Summer Workshop and Symposium, “Meeting of Maple Minds”, Symbolic algorithms panel, Rensselaer, New York.
12. **August 16th** “Ways of thinking about duality,” Student Session, XV International Mathematical Programming Symposium, Ann Arbor, Michigan.
13. **August 18th** “Viscosity derivatives: theory and applications,” XV International Mathematical Programming Symposium, Ann Arbor, Michigan.

14. **August 18th** “Maximization entropy methods (using derivative information) and infinite dimensional convex programming,” XV International Mathematical Programming Symposium, Ann Arbor, Michigan
15. **October 7th** “Giuga’s conjecture on primality,” Centre de Recherche Mathematiques XXV Anniversary Conference, Montreal, Quebec
16. **November 18th** “Experimental mathematics, promises and pitfalls,” Colloquium, Dept of Mathematics, Indiana University, Bloomington Indiana.
17. **November 24th** “Experimental mathematics, promises and pitfalls,” Colloquium, Dept of Mathematics and Statistics, University of Calgary.
18. **December 11th** “Characterizations of generalized subgradients amongst one-dimensional multifunctions: and extensions,” CMS Winter Meeting, Special Session on Nonsmooth Analysis Meridien Hotel, McGill University.
19. **December 16th** “Control problems with perturbations in non-reflexive space,” with J. Zhu, 33rd CDC-IEEE Meetings Orlando/Florida

12.10 1995

1. **January 7th** “Minimal multifunctions and their applications,” Special Session on multivalued nonlinear dynamics, AMS Winter Meeting, Hilton Hotel, San Francisco.
2. **February 22nd** “Virtual Science: the future of mathematical research,” President’s Lecture Series, Simon Fraser University.
3. **March 2nd** “Virtual Science: the future of mathematical research,” Science I, University of British Columbia.
4. **March 5th** “Essentially strictly differentiable Lipschitz functions,” West Coast Optimization Meeting, University of Washington.
5. **April 1st** “Minimal multifunctions and their applications,” Workshop on Nonsmooth Analysis and Applications, University of California at Santa Barbara, April 1–2.
6. **April 7th** “Experimental mathematics, promises and pitfalls,” Colloquium, Dept of Mathematics and Computing Science, University of Northern British Columbia, Prince George, BC.
7. **May 17th** “Experimental evaluation of Euler sums,” Halberstam retirement conference, Urbana, Illinois, May 16–21, 1995.
8. **June 28th** “Viscosity derivatives: theory and applications,” Analysis Seminar, University of Auckland, New Zealand.
9. **July 5th** “Experimental mathematics, promises and pitfalls,” Principal Lecture, Australian Mathematical Society Meeting, University of Tasmania, Hobart, Tasmania.
10. **July 11th** “Maximum entropy methods (using derivative information) and infinite dimensional convex programming,” Principal Lecture, Optimization Miniconference, University of NSW, Sydney.

11. **July 17th** “Essentially strictly differentiable Lipschitz functions,” Seminar, University of Newcastle, Australia.
12. **July 18th** “On Khinchine’s Constant,” Seminar, University of Newcastle, Australia.
13. **July 19th** “Experimental mathematics, promises and pitfalls,” University Public Lecture, University of Newcastle, Australia.
14. **July 27th** “Experimental mathematics, promises and pitfalls,” Colloquium, Department of Mathematics and Statistics, University of Western Australia.
15. **August 1st** “Maximum entropy methods (using derivative information) and infinite dimensional convex programming,” Pure Mathematics Seminar , University of Western Australia, Perth.
16. **August 7th** “Experimental mathematics, promises and pitfalls,” Colloquium, Department of Mathematics and Statistics, Murdoch University. Perth, Western Australia.
17. **October 5th** “What is Experimental mathematics?” Principal Lecture, Workshop on Experimental Mathematics, CARMA, Technical University of Denmark.
18. **October 24th** “Convex Haar null sets in separable Banach spaces,” Lecture at Honoris Causa ceremony for R.T.Rockafellar, Université de Montpellier II.
19. **October 26th** “Experimental mathematics: promises and pitfalls,” General Colloquium Lecture, University of Utrecht.
20. **October 26th** “The cubic AGM discovered,” Specialist Colloquium Lecture, University of Utrecht.
21. **November 8th** “Convex Haar null sets in separable Banach spaces,” Functional Analysis Seminar, Department of Mathematics and Statistics, University of Saskatchewan.
22. **November 9th** “Experimental mathematics, promises and pitfalls,” Colloquium, Department of Mathematics and Statistics, University of Saskatchewan.
23. **December 7th** “On Khinchine’s Constant,” Colloquium, Department of Mathematics and Statistics, University of Calgary.

12.11 1996

1. **February 6th** “Experimental mathematics, promises and pitfalls,” Colloquium & MAA Visiting Lecture, Department of Mathematics, Western Washington University.
2. **March 29th** “The Organic Mathematics Proceedings,” Colloquium, University of Manitoba.
3. **June 13th** “Multidimensional Euler Sums: some Recent Results,” Combinatorics and Graph Theory Conference (in honour of Herbert Wilf’s 65th birthday), June 13-15, University of Pennsylvania.
4. **August 10th** “Convex Analysis and Applications,” AMS Mathfest, University of Washington.

5. **August 14th** “Multidimensional Euler Sums: some Recent Results,” CECM Conference on Analysis and its Computational Applications, Simon Fraser University, August 14–15.
6. **August 21st** “Multidimensional Euler Sums: some Recent Results,” Fifth Canadian Number Theory Association Meeting, Carleton University, August 17–22.
7. **August 23rd** “Virtual science: the changing face of Mathematics,” National Council of Teachers of Mathematics, Canadian Regional Meeting, Vancouver, August 22–23.
8. **September 21st** “Mathematical publishing on the web,” 10th Pacific North West Numerical Analysis Seminar, Vancouver.
9. **November 5th** “Multi-modal Mathematics,” First Annual TeleLearning Meeting and Conference (as part of Plenary – Theme 5: Post Secondary Education), Montreal November 5–7.
10. **November 15th** “Doing Mathematics on the Web,” Colloquium, Department of Mathematics, University of British Columbia.

12.12 1997

1. **January 15th** “Doing Mathematics on the Web,” Colloquium, Department of Mathematics and Statistics, Simon Fraser University.
2. **February 20th** “Doing Mathematics on the Web,” Colloquium, Department of Mathematics, Stats and CS, Dalhousie University.
3. **March 4th** “Maximum Entropy Methods an Introduction,” VHHSC Medical Imaging Group Open House, Vancouver Hospital and Health Science Centre.
4. **March 7th** “Online publishing: two views from the electronic trenches,” Scholarly Communication in the Next Millennium, Simon Fraser University (Harbour Centre), March 5–8.
5. **March 26th** “Doing Mathematics on the Web,” Colloquium, Science Faculty, Malaspina University College, Nanaimo, BC.
6. **April 19th** “Evaluation of multi-dimensional Euler Zagier sums,” AMS Special Session on Algebraic and Elementary Number Theory, Corvallis Oregon, April 19-20.
7. **April 24th** “Mathematics on Main Street,” Board-Faculty Association Dinner (with P. Borwein), Simon Fraser University.
8. **May 2nd** “Partially smooth variational analysis,” AMS Special Session on Optimization and Variational Analysis, Wayne State, Detroit, May 2–4.
9. **May 5th** “Talking about Pi,” Mathematics and Statistics Department Colloquium, Western Michigan University, Kalamazoo.
10. **May 20th** “Multi-dimensional polylogarithmic sums,” CRM Workshop on Experimental Mathematics and Combinatorics, Montreal, May 19–23.
11. **June 1st** “Mathematical publishing on the web,” CAMS-Fields Mini-Colloquium on Technology and Mathematical Education, Toronto.

12. **June 29–30** “The MathResource and the MathBrowser,” 13 presentations at NECC, Seattle.
13. **July 14th** “three adventures: Symbolically discovered identities for ZETA($4N+3$) and like matters,” Plenary talk, Formal Power Series and Algebraic Combinatorics, 9, Vienna, July 14–18.
14. **July 31st** “Symbolically discovered identities for ZETA($4N+3$) and multidimensional polylogarithms,” Penn State Number Theory Conference, July 31–Aug 3.
15. **August 4** “Talking about Pi,” two lectures, Canada USA Mathcamps, Babson College, Wellesley, Mass.
16. **August 5** “Virtual science: the changing face of mathematical research,” three lectures, Canada USA Mathcamps, Babson College, Wellesley, Mass.
17. **August 6** “Doing mathematics on the web: the organic mathematics collection,” two lectures, Canada USA Mathcamps, Babson College, Wellesley, Mass.
18. **September 22nd** “Mathematical publishing on the web,” Colloquium, School of Mathematical Sciences, Lakehead University.
19. **September 22nd** “Talking about Pi,” Colloquium, School of Mathematical Sciences, Lakehead University.
20. **September 24th** “Inverse symbolic calculation: empirical mathematics,” CRM Workshop on Computer Algebra and Statistics, Montreal, September 21–27.
21. **October 6th** “Doing mathematics on the web,” 1997 Elizabeth Laird Lecture, University of Winnipeg.
22. **October 7th** “Why Pi?” Colloquium, Department of Mathematics and Statistics, University of Winnipeg.
23. **October 9th** “three adventures: Symbolically discovered identities for ZETA($4N+3$) and like matters,” Joint CS/C&O Colloquium, University of Waterloo.
24. **November 3rd** “Talking about Pi,” Undergraduate Colloquium, University of Western Ontario.
25. **November 5-6** “Multimodal Mathematics,” Software Demonstrations, Telelearning NCE, Second Annual Conference, Toronto.

12.13 1998

1. **March 9th** “Partially smooth variational analysis,” Workshop talk, CMA National Symposium on *Functional Analysis, Optimization and Applications*, University of Newcastle, March 9-21.
2. **March 13th** “Sandwich (interpolation) theorems for Lipschitz functions,” Workshop talk, CMA National Symposium on *Functional Analysis, Optimization and Applications*, University of Newcastle, March 9-21.

3. **March 16th** “Virtual science: doing math on the web,” Public lecture in conjunction with CMA National Symposium on *Functional Analysis, Optimization and Applications*, University of Newcastle, March 9-21.
4. **March 20th** “Projection algorithms and monotone operators,” Plenary lecture in conjunction with CMA National Symposium on *Functional Analysis, Optimization and Applications*, University of Newcastle (CIDACS and Mathematics), March 9-21.
5. **March 31st** “Three adventures in symbolic computing,” the Macquarie Mathematics Colloquium and Number Theory Seminar.
6. **April 22nd** “The Joy of Pi,” joint presentation and book signing with D. Blatner and L. Berggren, University of Washington Bookstore.
7. **April 24th** “Partially smooth variational analysis,” Spring 1998 West Coast Optimization Meeting, Harbour Centre, Simon Fraser University.
8. **June 10th** “Some new mean value inequalities,” Analysis Seminar, Dalhousie University.
9. **June 29th** “Euler sums,” CECM98 Analysis Day, Simon Fraser University.
10. **Aug 3-7** “Multifunctional and functional analytic methods in nonsmooth analysis,” Five Lectures, NATO Advanced Study Institute on *Analyse non linéaire, équations différentielles et contrôle*, University of Montreal, July 27–Aug 7.
11. **October 1st** “High Performance Symbolic Computing: A Mathematician’s Perspective,” Plenary Lecture, NESRC-MSRI Workshop on Parallel Symbolic Computation (Oct. 1–3), Berkeley.
12. **November 13th** “Brainstorming: views of the future,” Presentation, First Workshop of the IMU *Committee on Electronic Information and Communication*, (Nov 13–14), Konrad-Zuse-Zentrum für Informationstechnik, Berlin.
13. **November 18th** “Collaborative Networking Technology in the Mathematical Sciences,” *MITACS/Canada-China Opening*, Asia-Pacific Centre, UBC.
14. **November 21st** “Math Resources: Interactive Mathematics Workspaces,” *Eleventh International Conference on Technology in Collegiate Mathematics*, New Orleans, (Nov 20–22).

12.14 1999

1. **January 16th** “Experimental Mathematics: Insight from Computation,” MAA Invited Address, Combined Mathematics Meetings, San Antonio, January 12–16.
2. **January 21st** “Some New Mean–value Inequalities,” Lecture I, Institute of Advanced Research in Mathematics (IAS), Technion, Haifa, Israel.
3. **January 24th** “Partially smooth variational analysis,” Nonlinear analysis seminar, Technion, Haifa, Israel.
4. **January 25th** “Experimental Mathematics: Insight from Computation,” Lecture II, Institute of Advanced Research in Mathematics (IAS), Technion, Haifa, Israel.
5. **January 27th** “Talking about Pi,” Technion Mathclub Lecture, Technion, Haifa, Israel.

6. **January 28th** “Projection Algorithms & Tangency Formulae,” Lecture III, Institute of Advanced Research in Mathematics (IAS), Technion, Haifa, Israel.
7. **February 6th** “Some New Mean–value Inequalities,” Winter 1998 West Coast Optimization Meeting, University of Washington, Feb 5-6.
8. **February 8th** “Publishing on the Web,” Burnaby Rotary Club.
9. **March 12th** “Experimental Mathematics: Insight from Computation,” 2 hour Invited Address, MAA Pacific Northwest Section Meeting, Willamette University, Salem Oregon, March 12-13, 1999.
10. **March 13th** “Why Pi? ,” Dinner Address, MAA Pacific Northwest Section Meeting, Willamette University, Salem Oregon, March 12-13, 1999.
11. **March 28th - April 2nd** “Convex Analysis and Nonlinear Optimization,” Mini-course (9 hours), 5th International Conference on Approximation and Optimization in the Caribbean, Gaudeloupe, March 28 - April 2, 1999.
12. **May 29th** “Generic Behaviour of Generalized Gradients,” Special Session on Nonlinear Analysis, Canadian Mathematical Society Summer Meeting, Memorial University.
13. **June 4th** “ Numerical and Computational Mathematics at the Undergraduate Level,” Technology in Mathematics Education (TMEST), Plenary, Brock University, June 3-4.
14. **June 4th** “ The Doing of Mathematics in the Presence of Technology,” Canadian Mathematics Education Study Group (CMESG), First Plenary, Brock University, June 4-8.
15. **June 13th** “Distributed Network Mathematics Laboratories,” TI-NCE Project Leaders Meeting, Toronto.
16. **July 13th** “ The Doing of Mathematics in the Presence of Technology,” Session on Electronic Information and Communication, Joint Australian-American Math Society Meetings, Melbourne, July 12-15.
17. **July 13th** “Maximizing Surprise,” Session on Operations Research, Joint Australian-American Math Society Meetings, Melbourne, July 12-15.
18. **July 13th** “Generic Behaviour of Generalized Gradients,” Session on Nonlinear Dynamics and Optimization, Joint Australian-American Math Society Meetings, Melbourne, July 12-15.
19. **July 16th** “Some New Mean-Value Theorems,” Sixth Australian Optimization Day, Ballarat, Victoria.
20. **July 29th** “Experimental Mathematics and Exact Computation,” Plenary Lecture, International Symposium on Symbolic and Algebraic Commutation (ISSAC), Vancouver, July 29–31, 1999.
21. **August 3rd** “Distributed Network Mathematics Laboratories,” MITACS Day, CECM, Simon Fraser University.
22. **September 14th** “Partially Smooth Variational Analysis,” Seventh Conference on Well-posedness and Stability of Optimization Problems, Gargnano Italy, September 13–18.

23. **September 17th** “Experimental Mathematics and Exact Computation,” Colloquium, Physics Department, University of Bologna.
24. **September 22nd** “Honoris Causa,” acceptance speech, University of Limoges.
25. **September 23rd** “Maximizing Surprise,” Colloque: Analyse et Applications”, University of Limoges, September 22–23.
26. **October 1st** “Maximizing Surprise,” Colloquium, Pure Mathematics Department, University of Western Ontario.
27. **October 14th** “Doing Math in the Presence of Technology,” Colloquium, Department of Mathematics and Statistics, Miami University of Ohio (1999 Buckingham Fellow in Residence).
28. **October 15th** “Experimental Mathematics: Insight from Computation,” Twenty-Seventh Annual Fall Conference: “Experimental Mathematics”, Miami University, October 15–16.
29. **October 16th** “Pi and its Computation,” Twenty-Seventh Annual Fall Conference: “Experimental Mathematics”, Miami University, October 15–16.
30. **November 9th** “Issues for Active Math and Math Labs,” (with June Lester), Issues for next generation telelearning systems, Telelearning 1999, Montreal, November 6–9.
31. **November 12th** “Interactive Mathematics Labs,” CECM-MITACS Day Presentation, SFU.

12.15 2000

1. **March 13-16th** “Parallel Symbolic Computation: Methods and Issues,” Haifa-Technion Workshop on ‘Inherently parallel algorithms in optimization and feasibility and their applications’, March 14.
2. **April 8th** “Experimental Mathematics and Exact Computation,” Washington State Meeting on Exact Algorithmics, Pullman Washington.
3. **April 12th** “Experimental Mathematics and Exact Computation,” Colloquium, Mathematics Department, Temple University, Philadelphia.
4. **April 13th** “Experimental Mathematics and Exact Computation,” Colloquium as Thirteenth Annual Donald H. Clanton Visiting Mathematician, Furman University, South Carolina.
5. **April 13th** “The Impact of Technology on the Doing of Mathematics,” Public Lecture as Donald H. Clanton Visiting Mathematician, Furman University, South Carolina.
6. **April 19th** “Experimental Mathematics and Exact Computation,” Colloquium, University of Western Australia.
7. **May 24th** “Maximizing Surprise,” Colloque, Université des Antilles et de la Guyane, Guadeloupe.
8. **May 29th** “Some New Mean-Value Theorems,” Colloque, Université des Antilles et de la Guyane, Guadeloupe.

9. **May 31st** “Generic Properties of Generalized Gradients,” Colloque, Université des Antilles et de la Guyane, Guadeloupe.
10. **June 2nd** “Mathématiques numerique et informatique,” Conférence, 5ieme Colloque de l’IREM (Institut de recherche sur l’enseignement des mathématiques) Antilles-Guyane, Guadeloupe.
11. **June 10th** “CEIC–IMU Initiatives,” CMS special session on *Mathematics on the Internet, II* (MOTI-2), CMS Year 2000 Summer Meeting, Hamilton, June 10–13.
12. **June 17th** “ Numerical and Computational Mathematics at the Undergraduate Level,” Plenary lecture, Pacific Northwest Sectional MAA Meeting, UBC, 16–17 June.
13. **July 13th-14th** “Experimental Mathematics and Other Good Stuff,” Four Hour Lecture Series, Canada-US MathCamps, University of British Columbia.
14. **July 19th** “The Generic Behaviour of Generalized Gradients,” Third World Congress of Nonlinear Analysts, Special session on “Variational Analysis and Optimization”, July 19-25, 2000, Catania, Italy.
15. **July 25th** “ Tools for (Partially) Smooth Variational Analysis,” Third World Congress of Nonlinear Analysts, Plenary Lecture, July 19-25, 2000, Catania, Italy.
16. **October 4th** “Experimental Mathematics and Exact Computation,” Colloquium at GSF-Forschungszentrum Inst. für Biomathematik und Biometrie, University of Munich.
17. **October 5th** “Experimental Mathematics and Exact Computation,” Ernst Schroedinger Lecture, Schroedinger Institute, University of Vienna.
18. **October 17th** “Experimental Mathematics and Other Good Stuff,” Science One Presentation, University of British Columbia.
19. **November 2nd** “Maximizing Surprise,” Colloquium, Mathematics Department, Michigan State University.
20. **November 5th** “The use of wireless and handheld devices in tele-learning,” Panel, Tele-learning Annual Meeting, Toronto.
21. **November 27th** “Experimental Mathematics and Exact Computation,” Colloquium, University of Coimbra, Portugal.
22. **November 28th** “Experimental Mathematics and Exact Computation,” Colloquium, University of Lisbon.
23. **December 10th** “Multivariable sinc integrals and volumes of convex polyhedra,” Special Session on Classical and Computational Analysis, Canadian Mathematical Society Winter Meeting, Vancouver.

12.16 2001

1. **January 10th** “Multivariable sinc integrals and volumes of convex polyhedra,” Special Session on Series and Integrals, Combined Mathematics Meetings, New Orleans, January 9-13.

2. **April 18th** “Aesthetics for the Working Mathematician,” Public Lecture at Queens University Symposium on Beauty and the Mathematical Beast, April 18-19.
3. **May 17th** “Maximum Entropy-Type Methods and Convex Programming,” at Workshop on New Approaches to the Phase Problem, Lawrence Berkeley National Laboratory, May 17-19 (replaced by poster)
4. **June 28th** “Exploring Math on the Internet,” Esso-CMS-PIMS Math Camp, (9.00-12.00), Simon Fraser, June 25-29.
5. **July 27th** “The International Math Union’s Electronic Initiatives — and WestGrid,” CECM01 Summer Conference, *Analysis, Computation and Communication* Simon Fraser, July 27-28.
6. **August 16th** “Multivariable sinc integrals and volumes of convex polyhedra,” Analysis Seminar, Newcastle University, NSW.
7. **August 20th** “Aesthetics for the Working Mathematician,” Special Mathematics Seminar, University of New South Wales, Sydney.
8. **August 21st** “Aesthetics for the Working Mathematician,” Mathematics Colloquium, MacQuarie University, Sydney.
9. **August 21st** “Experimental Mathematics and Exact Computation,” Number Theory Seminar, MacQuarie University, Sydney.
10. **September 25th** “The International Mathematical Union’s Electronic Initiatives,” First International Workshop on Mathematical Knowledge Management, Sept 24-26, RISC Linz, Austria.
11. **October 22th** “Multivariable sinc integrals and volumes of convex polyhedra,” ALGO Seminar, INRIA - Rocquencourt, France.
12. **October 22th** “Dirichlet Series of Squares of Sums of Squares,” ALGO Seminar, INRIA - Rocquencourt, France.
13. **October 23rd** “Experimental Mathematics and Exact Computation,” Distinguished Visitor Colloquium, INRIA - Rocquencourt, France.
14. **October 24th** “Experimental Mathematics and Exact Computation,” Colloquium, University of Limoges, France.
15. **November 2nd** “Challenges in Mathematical Computing — Why Math is Still Hard,” MAA Seaway Sectional Meeting, after dinner lecture, Brock University, St. Catherines, November 2-3, 2001.
16. **November 15th** “Collaborative online mathematics: wishing and hoping,” plenary lecture, Fields Institute Workshop on *Online Mathematics*, November 15-17, 2001.
17. **December 9th** “Aesthetics for the Working Mathematician,” Special Session on History of Mathematics, CMS Winter Meeting, Toronto, December 8-10, 2001.

12.17 2002

1. **February 16th** “The International Mathematical Union’s Electronic Initiatives,” at workshop on *Managing digital information in mathematics: From journals to the gray literature*. during the *Fourth Annual CEIC Meeting*, Vancouver Wosk Centre, February 15-17, 2001.
2. **March 20th** “Why Math is (Still) Hard: Challenges for Mathematical Computing,” Distinguished Visitors Colloquium, Wayne State, Detroit.
3. **March 26th** “Mathematical Marvels: Fields of Dreams,” in Simon Fraser series *A Passion For Excellence*, on the Nobel and like Prizes.
4. **April 22nd** “Why Math is (Still) Hard: Challenges for Mathematical Computing,” Colloquium, Centre de Recherches Mathématiques, Montreal.
5. **May 4th** “Differentiability of monotone functions on separable Banach space,” Spring 2002 West Coast Optimization Meeting, Burnaby Mountain Campus, Simon Fraser University.
6. **May 22nd** “Dirichlet series for squares of sums of squares,” Plenary Lecture at *Seventh Canadian Number Theory Association Conference* at CRM, May 19-25, 2002.
7. **May 26th** “The Experimental Mathematician: The Pleasure of Discovery and the Role of Proof,” Plenary Lecture at *25th Anniversary Meeting of the Canadian Math Educators Study Group* (CMESG), Queens University, Kingston, May 25-29, 2002.
8. **May 27th** “The Experimental Mathematician: The Pleasure of Discovery and the Role of Proof,” Response and Discussion, *25th Anniversary Meeting of the Canadian Math Educators Study Group* (CMESG), Queens University, Kingston, May 25-29, 2002.
9. **July 16th** “Bregman Monotone Optimization Methods and Related Convex Functions,” Plenary Lecture, *IV Brazilian Workshop on Continuous Optimization*, IMPA, Rio de Janiero, July 15-20, 2002.
10. **August 17-19th** “The Experimental Mathematician: A Computational Guide to the Mathematical Unknown,” Plenary Lecture at *The First International Congress of Mathematical Software*, Beijing, August 17-19, 2002.
11. **August 26th** “Introduction to the work of the CEIC,” *Electronic Information Afternoon* at the ICM, Beijing, August 20-27, 2002.
12. **August 29th** “The Next Four Years,” Invited Lecture at ICM Satellite Meeting on *Electronic Information and Communication in Mathematics*, Beijing, August 29-31, 2002.
13. **August 31st** “The Digital Library of Mathematics,” Presentation at ICM Satellite Meeting on *Electronic Information and Communication in Mathematics*, Beijing, August 29-31, 2002.
14. **September 21st** “Welcome to the Mathematics of Dynamic SPECT,” Workshop on *Exploring the Frontiers of Dynamic SPECT*, Wall Institute, UBC, Vancouver, September 20-23, 2002.
15. **October 18th** “Dirichlet series for squares of sums of squares,” Discrete Mathematics Seminar, University of Calgary.

16. **November 2nd** “The CEIC: The Next Four Years,” West Coast Optimization Fall Meeting, University of Washington.
17. **November 13th** “Differentiability of monotone functions on separable Banach space,” Non-linear Analysis Seminar, University of Pau, France.
18. **November 14th** “The Experimental Mathematician: A Computational Guide to the Mathematical Unknown,” Numerical Analysis Seminar, University of Pau, France.
19. **December 9th** “Digitizing the entire mathematical literature: what wild surmise!” CMS Special Session on *History of Mathematics*, Ottawa, December 8-10, 2002. (Also presented to CISTI Board, December 6th.)

12.18 2003

1. **January 24th** “Discovery in Mathematics,” Workshop on *Special Functions in the Digital Age*, Simon Fraser, January 23–24, 2003.
2. **February 26th** “The Life of Pi,” Colloquium, Mathematics Department, Simon Fraser University.
3. **March 3rd** “The long range plan for high-end computing in Canada,” Vancouver ‘town hall’ meeting, Simon Fraser University.
4. **March 10th** “The long range plan for high-end computing in Canada,” Victoria ‘town hall’ meeting, University of Victoria, B.C. .
5. **March 13th** “The Fields, Nevanlinna and Abel Prizes: Chasing the Mathematical Prize,” in lecture series *Recognizing Excellence. The Nobels and Other Prizes*, Series, SFU Harbour Centre, 2003.
6. **March 14th** “The Life of Pi,” *Pi Day Open House*, Simon Fraser University.
7. **March 24th** “The Life of Pi,” *Frontiers of Mathematics*, Lecture Series, Texas A&M University, March 22–27, 2003.
8. **March 25th** “Experimentation in Mathematics: Part I,” *Frontiers of Mathematics*, Lecture Series, Texas A&M University, March 22–27, 2003.
9. **March 26th** “Experimentation in Mathematics: Part II,” *Frontiers of Mathematics*, Lecture Series, Texas A&M University, March 22–27, 2003.
10. **April 28th** “Experimentation in Mathematics,” Dalhousie University, Faculty of Computing Science Colloquium, 2003.
11. **April 30th** “Canadian Highend Computing Initiatives,” NRC-CISTI Presentation, CISTI Advisory Board, Fredericton.
12. **May 8th** “Official WestGrid Launch,” Vancouver MC, NewMIC, Edmonton, Calgary, Ottawa.
13. **May 18th** “Bringing Math to the Public,” Panel Moderator, CMS National School Math Forum, May 16–18, Montreal.

14. **June 13th** “Nurturing New Mathematicians: Some Advice on Advising,” presentation at Panel on Supervision, *Project NextMAC*, CMS 2003 Summer Meeting, University of Alberta, Edmonton, Alberta.
15. **June 25th** “Mathematics by Experiment: Plausible Reasoning in the 21st Century,” Colloquium, University of Adelaide, Australia.
16. **June 27th** “Experimentation in Mathematics: Computational Paths to Discovery.” Colloquium, University of Adelaide, Australia.
17. **July 1st** “The Life of Pi,” Colloquium, University of South Australia, Adelaide, Australia.
18. **July 3rd** “The Life of Pi,” Colloquium, Royal Melbourne Institute of Technology, Melbourne, Australia.
19. **July 7th** “Handling Electronic Issues in the International Mathematical Community,” ICIAM 2003 Mini-symposium, International Congress on Industrial and Applied Mathematics, Sydney, Australia.
20. **July 9th** “Advanced Collaboration and Grid Computation, I” ICIAM 2003 Mini-symposium, International Congress on Industrial and Applied Mathematics, Sydney, Australia.
21. **July 9th** “Advanced Collaboration and Grid Computation, II” ICIAM 2003 Mini-symposium, International Congress on Industrial and Applied Mathematics, Sydney, Australia.
22. **July 15th** “The Life of Pi,” Colloquium, University of Newcastle, NSW, Australia.
23. **July 31st** “The AGM Continued Fraction of Ramanujan,” CECM Day 2003, SFU.
24. **September 10th** “A One Function Variational Principle,” Eighth Conference on Well-posedness and Stability of Optimization Problems, Marseilles France, September 8–12.
25. **September 16th** “The AGM Continued Fraction of Ramanujan,” First Plenary Lecture, *First Congress of the Mathematical Society of South East Europe (MASSEÉ)*, Borovets, Bulgaria.
26. **September 16th** “The World Digital Mathematics Library,” Special Session, First Congress of the Mathematical Society of South East Europe (MASSEÉ), Bulgaria.
27. **September 17th** “Three Open Questions,” Special Session in Honour of Petar Kenderov’s 60th Birthday, First Congress of the Mathematical Society of South East Europe (MASSEÉ), Bulgaria.
28. **October 10th** “The Life of Pi,” Colloquium, Dalhousie University.
29. **October 14th** “The AGM Continued Fraction of Ramanujan,” Colloquium, Reed College, Oregon.
30. **October 21st** “Plausible Reasoning in the 21st Century.” Royal Society Lecture Series. Simon Fraser University.
31. **October 23rd** “Mathematics by Experiment: Plausible Reasoning in the 21st Century.” Colloquium, University of Northern British Columbia.
32. **October 30th** “The Life of Pi,” Colloquium, University of Regina.

33. **October 31st** “Mathematics by Experiment: Plausible Reasoning in the 21st Century.” Colloquium, University of Saskatchewan.
34. **November 27th** “Advanced Collaboration and Grid Computation,” Presentation to the SFU Board of Governors.

12.19 2004

1. **January 6th** “Advanced Collaboration and Grid Computation,” Plenary Lecture, North American Knowledge Management Meeting, Phoenix.
2. **January 28th** “Experimentation in Mathematics,” Graduate Seminar, Mathematics Department, Dalhousie.
3. **January 29th** “Advanced Collaboration and Grid Computation,” Seminar, Dalhousie Faculty of Computer Science.
4. **March 4th** “Ramanujan’s AGM Continued Fractions and Dynamics: the real case,” Colloquium, Mathematics Department, Dalhousie.
5. **March 10th** “Ramanujan’s AGM Continued Fractions and Dynamics: the complex case,” Analysis Seminar, Mathematics Department, Dalhousie.
6. **March 11th** “Maximizing Surprise,” Informal AARMS Workshop, Dalhousie Faculty of Computer Science.
7. **March 12th** “Advanced Collaboration and Grid Computation,” Informal AARMS Workshop, Dalhousie Faculty of Computer Science.
8. **March 29th** “Experimentation in Mathematics,” Opening Lecture, Workshop on Experimental Mathematics, Oakland, March 29–30.
9. **April 5th** “Decomposition of Monotone Operators,” Workshop on Control, Set-Valued Analysis and Applications University of French Antilles and Guyana, April 5–8.
10. **May 8th** “Experimentation in Mathematics,” Plenary Lecture, East Coast Computer Algebra Day, Wilfred Laurier University.
11. **May 14th** “A Single Function Variational Principle and Applications,” Large Scale Nonlinear and Semidefinite Programming Workshop, University of Waterloo, May 12–15.
12. **June 2nd** “Mathematics by Experiment,” Opening Lecture, Discovery by Computer GERAD-DIMACS Workshop, Montreal, June 2–5.
13. **June 13th** “Advanced Computing in Canada” Presentations on the Long Range Plan for Advanced Computing in Canada to the CMS Development Group and to the Board, CMS Summer Meeting, Halifax.
14. **June 14th** “David Borwein and Me: a Chronology,” CMS Summer Meeting, Halifax.
15. **June 25th** “Plausible Reasoning in the 21st Century I & II,” NSF Undergraduate Research Experience Lectures, Clemson University, South Carolina.

16. **June 28th** “Advanced Collaborative Environments and the Access Grid,” 4th European Math Congress, Stockholm (delivered by Alf van der Poorten).
17. **July 9th** “Plausible Reasoning in the 21st Century,” Regular Lecture, ICME10, Copenhagen, July 5-11.
18. **July 9th** “The work of the CEIC,” Presentation to ICMI General Assembly, ICME10, Copenhagen, July 5-11.
19. **July 15th** “Bumps, Slices and Cusps,” Plenary Lecture on Nonsmooth Analysis, First Franco-Canadian Math Meeting, Toulouse, July 12-15.

13 Additional information

Additional information is to be found on the CECM Web Site: <http://www.cecm.sfu.ca/personal/jborwein> and at <http://www.cs.dal.ca/>