Biographic Information

Jonathan Michael Borwein

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Jonathan Michael Borwein[1] is currently Laureate Professor in the School of Mathematical and Physical Sciences at the University of Newcastle (NSW) with adjunct appointments at Dalhousie and at Simon Fraser. He directs the University Priority Researh Centre in Computer Assisted Research Mathematics and its Applications (CARMA).

Jonathan Borwein was born in St Andrews Scotland in 1951. He attended school in Scotland and Ontario. After graduating with an Honors B.A. from the University of Western Ontario in 1971, he went to Oxford as an Ontario Rhodes Scholar (1971) at Jesus College, where he completed a Mathematics D. Phil. (1974) in *Optimization Theory*. From 1974 until 1991, Dr. Borwein worked at Dalhousie University where he became Professor of Mathematics in 1984. He has also been on permanent faculty at Carnegie-Mellon University (1980-82) and the University of Waterloo (1991-93) and has spent visiting periods on French, Israeli and Australian National Fellowships.

From 1993-2003, he was *Gordon M. Shrum Professor* of Science at Simon Fraser University and held a *Canada Research Chair* in Information Technology (2001-2003), under whose aegis Dr Borwein led the Simon Fraser *CoLab* to examine and develop advanced collaborative environments in the mathematical sciences. He was founding Director of the Simon Fraser *Centre for Experimental and Constructive Mathematics* (CECM) from 1993-2003 and from 2001-2004 the advanced collaborative *Simon Fraser CoLab* (www.colab.sfu.ca). Between January 200 and June 2009 he joined the Faculty of Computer Science at Dalhousie again as a Canada Research Chair, focussing on Distributed and Collaborative Research.

Dr. Borwein spent the first half of 1986 as a "Distinguished Visiting Professor" at the Université de Montreal and was a Senior Killam Fellow at Dalhousie in 1987-88. He gave the Canadian Mathematical Society's 1987 *Coxeter-James Lecture* (acknowledging outstanding research by a young Canadian Mathematician) and in 1988 became the only mathematician to have been awarded the Atlantic Provinces Council on the Sciences' *(APICS) Gold Medal for Research*. Between 1989 and 1991 he was Chair of the Mathematics Grants Selection Committee of the Natural Science and Engineering Research Council and served from 1992-1996 on NSERC's Committee for Collaborative Research Initiatives.

In 1994 Dr Borwein was elected to a Fellowship in the Royal Society of Canada. In 1996 he shared the "Academic of the Year Award" of British Columbia Confederation of University Faculty Associations with P. Borwein. In 1999 he received a "Doctorat Honoris Causa" from the University of Limoges and his family shared a University of Western Ontario

[1] Additional information including a full CV is to be found at www.cecm.sfu.ca/personal/jborwein/

National Alumini Award (Western Family Citation: Professional Achievement). In fall 2001 he was elected a Fellow of the American Association for the Advancement of Science (AAAS) as a "Member whose efforts on behalf of the advancement of science or its applications are scientifically or socially distinguished." In June 2002, he was featured in *BC Business* as one of "25 Power Thinkers. Some of B.C.'s best and brightest." In July 2003 Dr. Borwein was elected a Foreign Member of the Bulgarian Academy of Sciences.

From 1996-2007 Dr. Borwein sat on the National Board of *c3.ca Computational Inc.*, Canada's national high performance computing network. He sat on the *NATO Advisory Panel on Collaborative Research Grants* (1997,1998, chair 1998) and was a member of NATO's new *Panel on Engineering, Science and Technology* (2000-02). He was the Chair (2001-2003) of the *National Advisory Board* for the Canada Institute for Scientific and Technical Information (CISTI) of the National Research Council (1997-2003) of Canada and was Chair of the *Committee on Electronic Information and Communication* of the International Mathematical Union (2002-08, Deputy Chair 1998-2002). From 1995-98 he served on the British Columbia Rhodes Scholarship Selection Committee. During 1994-1997 he served as founding chair of the Canadian Mathematical Society's Electronic Services Committee. He is a member at large of the Board of the Academy of Science of the Royal Society of Canada (2007-09) and was on the Selection Committee for the Canadian Science and Technology Hall of Fame (2006-08).

Dr. Borwein's research interests include areas of pure mathematics (classical analysis, nonlinear analysis and functional analysis – "how to prove things"), applied mathematics (optimization theory and operations research, – "how to do things well") and computational mathematics (complexity theory, numerical and computational analysis, and medical imaging – "how to do big things fast"). He was founding Director (1993-2002) of Simon Fraser's *Centre for Experimental and Constructive Mathematics*, where these interests were fused with interests in the philosophy of science and the uses of technology and distributed-learning. A current research focus over the past decade is on advanced collaborative environments and high performance computing for the mathematical sciences. In this context he was appointed a *NewMIC Distinguished Fellow* of the Vancouver New Media Innovation Centre in 2001.

He is the author of many papers including a 1987 Scientific American article "Ramanujan and Pi" (1987), with his brother Peter who now also teaches at Simon Fraser, and "Ramanujan, modular equations, and approximations to pi: or how to compute one billion digits of pi," (1989, written with Peter Borwein and David Bailey of NASA) which was awarded the 1993 Chauvenet (the MAA's principal prize for a paper) and Hasse prizes for expository writing by the Mathematical Association of America. The ISI (`http://isihighlycited.com/`) has identified him as one of the 250 most cited mathematicians of the period 1980-1999.

Dr. Borwein has co-authored or edited over a dozen books including: *Pi and the AGM* (John Wiley 1987, with P. Borwein), a *Dictionary of Mathematics* (HarperCollins 1989-2002, with Glasgow philosopher E.J. Borowski), Dictionary of Real Numbers (Wadsworth 1990, with P. Borwein), a *Source Book on Pi* (Springer-Verlag 1997, 3ed 2004, with L. Berggren and P. Borwein), and *Convex Analysis and Nonlinear Optimization* (Springer-Verlag, Edition 2, 2005, with A. S. Lewis). He has coedited a book and CD *Multimedia Tools for Communicating Mathematics* (Springer-Verlag, 2002).

His most recent books are *Techniques of Variational Analysis*, (Springer-CMS 2005 with Jim Zhu), *Mathematics by Experiment*, with David Bailey (expanded in 2008) and *Experimentation in Mathematics* (A.K. Peters, 2004) with David Bailey and Roland Girgensohn—in 2006 the later two appeared as an inteactive CD. In 2008, with Stanford logician (and NPR's 'math guy') he wrote a more popular accounting of experimental mathematics (see `www.experimentalmath.info`) entitled *the Computer as Crucible*.

The Dictionary of Mathematics now exists as a Smithsonian-Collins book and as an award winning interactive CD called the MathResource which has spawned High School counterparts, LetsDoMath and Portrait4, (viewable along with other related software at www.mathresources.com). This has been contrived through the development of a modest but thriving software company, *MathResources Inc*, based in Halifax and founded in 1996 by Dr. Borwein and two partners. The company also makes software for handheld and wireless devices, and Learning Object Repositories.

Between 2004 and 2007 Dr. Borwein was the Associate Publisher of the Canadian Mathematical Society responsible for Books and Rich Media and is on, or has recently been on, the editorial board of over a dozen mathematical journals including the *Proceedings of the American Mathematical Society* (1998-2006). He is co-eitor in chief of Springer-Verlag's *SUMAT* Series of Springer Undergaduate Mathematics and Technology books. He served as the President of the Canadian Mathematical Society, 2000-2002 and was an MAA Governor (2004-07).