

VIII. PIMS PRIZES:

2001

Ken Foxcroft (TD Securities), Research Prize Winner Kai Behrend (UBC), and Ron Graham (San Diego).



Dick Peter (Dean of Science, U. Alberta) and Education Prize Winner Wieslaw Krawcewicz (U. Alberta). The Education Prize was awarded jointly to Klaus Hoechsmann (UBC) and Wieslaw Krawcewicz.

Ken Foxcroft (TD Securities), Michael Boorman (Dean of Science, U. Calgary), Industrial Prize Winner Martin Puterman (UBC) and Arvind Gupta (MITACS). Martin Puterman shared the prize with Michael Kouritzin (U. Alberta).



Three PIMS Prizes for research, education and industrial outreach were awarded at the PIMS Banquet held at SFU's Harbour Centre Campus on December 1, 2001.

The **PIMS Research Prize** is selected by the Institute's Scientific Review panel which consisted of: David Boyd, Gordon Slade, Nick Pippenger (UBC), Alistair Lachlan (SFU), Bob Moody (U. Alberta), Ian Putnam (UVic), Ron Graham (San Diego), Bernie Matkowski (Chicago), David Brillinger (Berkeley) and Gang Tian (MIT).

The 2001 PIMS Research prize has been awarded to **Kai Behrend**. Dr. Behrend studied mathematics at the University of Hamburg graduating in 1983. After a masters degree at the University of Oregon and a Diploma at the University of Bonn, he received his Ph.D. at the University of California at Berkeley in 1991, under Arthur Ogus. His thesis was on the "Lefschetz Trace Formula for the Frobenius Morphism of an Algebraic Stack". He was a Moore Instructor at MIT from 1991–1994 after which he joined UBC.

Yuri Manin writes: "*Partly in collaboration with Barbara Fantechi, Kai produced the first ever algebraic geometric construction of the Kontsevich virtual fundamental class and general Gromov-Witten invariants for arbitrary smooth projective algebraic manifolds.*"

Dr. Behrend's construction has provided a key step in the understanding of Gromov-Witten invariants and made possible some of the deepest work so far in enumerative algebraic geometry.

He is also regarded as one of the world's top experts in the burgeoning area of algebraic stacks. Fields medallist Maxim Kontsevitch writes: "*The work of Kai Behrend is of the highest level and is absolutely fundamental in algebraic geometry.*"

Kai Behrend has also received the 2001 Coxeter-James prize of the Canadian Mathematical Society.

The **PIMS Education Prize** for 2001 is awarded jointly to two very dedicated individuals: **Wieslaw Krawcewicz**, Professor at the University of Alberta and **Klaus Hochsmann**, Professor Emeritus at UBC. The PIMS Education prize committee, consisting of the six Site Directors, was unanimous in choosing these two from a field of seven nominees, who were all very deserving individuals in their own right.

Wieslaw Krawcewicz is the creator and moving force behind the highly successful new magazine "Pi in the Sky", which was launched two years ago under PIMS sponsorship. This magazine, devoted to improving awareness of mathematics among high school students, has been distributed free of charge to all high schools in Alberta and British Columbia, as well as selected sites throughout North America.

It has an attractive format, lots of jokes and cartoons, as well as articles written on mathematical topics, often with an angle of relevance to teenage life. For example, the first issue had its lead article entitled *A Date with Math* and had five enthusiastic schoolgirls on the cover. The magazine is also available online.

As one of his colleagues commented, "*At the beginning I was skeptical. I did not believe that such a project could be finalized. Wieslaw was extremely active in convincing and encouraging people, including myself, to participate. He did all kinds of work from editing and writing articles to making cartoons and math jokes. He had long discussions with high school students, undergraduates, teachers and other people involved in education. Wieslaw's enthusiasm is contagious.*"

The director of curriculum and programmes in the Edmonton public school system remarked, "*Our high school mathematics department heads all look forward to the magazine and frequently utilize its contents to enrich the math programme for their students. This publication has certainly helped to increase interest in mathematics. The contributions of Dr Krawcewicz to the students in Edmonton Public Schools have been and continue to be significant in helping to raise the bar in mathematics education. He is a most deserving candidate for the PIMS Education award.*"

One of Wieslaw's colleagues noted that "*the University of Alberta (and I expect other PIMS universities as well) is seeing the positive effect of Dr. Krawcewicz's efforts. Since the introduction of the magazine, enrolment in the first-year Honours Calculus classes at UA has approximately doubled; enrolment in our second year class has actually tripled. The magazine has made many students aware that mathematics can be interesting.*"

Sharing this year's prize is another person who has worked far beyond the call of duty in math

education and increasing public awareness and appreciation of mathematics, Professor Klaus Hoechsmann. Even before PIMS existed, he has been devoted to the cause of mathematics education. At UBC he developed, and was the first teacher of, the course “Mathematics by Inquiry” (Math 336), which has become the centrepiece of the new Certificate Programme for Mathematics Teachers, cosponsored by the Mathematics department and the Curriculum Studies department of the Education Faculty. It is a course designed to provide hands-on mathematical experience to educators. One of his former students—now teaching mathematics at a BC high school—remarked “*Using the principles he teaches, mathematics, like singing, is for everyone—not only the three tenors.*” Klaus inspires teachers to love and understand mathematics.

Upon becoming Chair of the PIMS Education Committee, Klaus truly went into high gear, putting tremendous enthusiasm into PIMS’ educational and outreach programmes. He co-organized the innovative Changing the Culture conferences, a BC forum for elementary, high school, and postsecondary math educators. Klaus was instrumental in creating the PIMS Elementary School Mathematics Contest (ELMACON) in partnership with the BC Association of Mathematics Teachers. He has spent countless hours with BCAMT people and individual teachers, made presentations at schools and conferences, and completely revamped PIMS’ activities in K-12 education. Many contributions to “Pi in the Sky” were authored by Klaus.

To celebrate the year 2000, the International Mathematics Year, Klaus designed and executed the hugely successful “Mathematics is Everywhere” poster campaign. Each month of the year a new poster would appear on buses in the lower mainland, with an attractive graphic and a mathematical problem, offering a \$100 prize for its solution, along with a web address for further information. The enthusiastic response of the public was beyond anyone’s expectations. These posters also became the basis for the first PIMS calendar, which is now becoming a collector’s item. A sequel to this poster campaign, celebrating Women in Mathematics, was developed by staff in the PIMS office, with Klaus’ encouragement.

The most innovative and ambitious of Hoechsmann’s contributions, perhaps, is the full-length play “Hypatia’s Street Theatre.” This is a dramatization based on the life of an early woman mathematician and philosopher in Alexandria, and is unique in that it actually teaches mathematical concepts within the play. It was performed in December 2000 to a full house in the Frederic Wood theatre on the UBC campus. Klaus not only wrote the script (with the assistance of professional playwright Ted Galay), but worked with the professional actors and stage crew throughout the rehearsals. He also paid for the production, devoting all of his (modest) stipend as a PIMS employee to the cause. Because of this, the nominators argued that there was really no conflict in awarding the PIMS Education prize to one of our own employees. Indeed the prize is richly deserved for all the effort Klaus has devoted over the years to mathematical education and public awareness.

This year the committee of Dr. Arvind Gupta (Chair, MITACS), Dr. Shahid Hussein (Telus), Mr. Randy Savoie (Ballard Powersystems), Mr. Jack Fujino (Stantec), Dr. Bryant Moodie (University of Alberta), and Dr. Chris Bose (University of Victoria), received seven nominations for the **PIMS Industrial Prize**. They were impressed by the significant contributions made by all the candidates. It is clear that industrial-university research programmes are thriving across the country.

The committee felt that two nominations stood out from the others. After considerable debate, they chose to recommend that **Michael Kouritzin** (University of Alberta) **Martin Puterman** (University of British Columbia) share this year’s industrial prize.



Ken Foxcroft (TD Securities), Industrial Prize Winner Michael Kouritzin (U. Alberta), Michael Boorman (Dean of Science, U. Calgary), and Arvind Gupta (MITACS).

The committee was very impressed that so early in his career, Dr. Kouritzin has established a strong and well-known industrial research programme. He founded the PINTS Centre (Predictions in Interacting Systems), which is supported by MITACS and PIMS. The centre focuses on novel filtering theory to track various types of objects from lost ships to pollution. His industrial partners unanimously agreed that Michael's research is having a significant impact on their own business plans.

It is difficult to imagine anyone who has put more time and energy into establishing close university-industry collaborations than Dr. Puterman. Dr. Puterman has a long and distinguished research career, most recently winning the Lancaster Prize. He was also an early advocate of industry-university research as pivotal to operations research. This led to the creation of the Centre for Operations Excellence (COE) at UBC. COE receives support from MITACS, PIMS, and a significant number of partner companies. Dr. Puterman's vision of giving students high-level research training in an industrial-university setting is a model that is a testament to what can be accomplished through vision and hard work.

The keynote address at the ceremony was given by **Philippe Tondeur**, Director of the Division of Mathematical Sciences at the National Science Foundation and Professor of Mathematics at the Uni-

versity of Illinois in Urbana-Champaign.

During his years at NSF Dr Philippe Tondeur has become an articulate voice for the role of the Mathematical Sciences in the U.S. Science and Engineering enterprise. It is worth noting that even after the tragic events of September 11th the NSF has received an 8.4% increase for Fiscal Year 2002. Closer to home, the birth of BIRS will always be connected to the leadership of Philippe Tondeur at the NSF. There is no doubt that the world mathematical community owes much to the clarity of vision and to the farsightedness of Philippe Tondeur in the development of BIRS.



Nassif Ghoussoub (PIMS) and Philippe Tondeur (NSF).