Summary of 2003 Research Activities

The researchers engaged by CMI and the programs it conducts are selected and approved by CMI's Scientific Advisory Board. The Board consists of Jim Carlson, Simon Donaldson, Gregory Margulis, Richard Melrose, Yum-Tong Siu, and Andrew Wiles.

In 2003, CMI increased to 10 the number of its Clay Research Fellows (formerly Long-Term Prize Fellows). Elon Lindenstrauss of Stanford (Ph.D. from The Hebrew University of Jerusalem) was appointed for two years, and began his work at the Courant Institute of Mathematics at New York University. Maria Chudnovsky, the first woman to hold the position, was appointed for five years and is continuing her work in Princeton. Fellows conduct their work at whatever institution is most suited to the advancement of their research. CMI defrays their research expenses, including travel to conferences and work with collaborators.

Elon Lindenstauss
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Maria Chudnovsky
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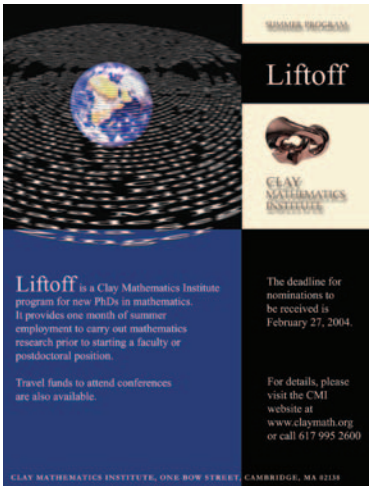
CMI also appointed several distinguished Clay Research Scholars (formerly Prize Fellows) in 2003. Among them were Steven Zelditch (Johns Hopkins University), who organized a program at MSRI on semi-classical analysis, and Manindra Agrawal, winner of the 2002 Clay Research Award for his work on primality testing. Agrawal spent the past year at the Institute for Advanced Study.

In 2003, CMI established a new Clay Senior Scholars program. Senior Scholars are distinguished mathematicians who play a leading role in a topical program at an institute or university away from their home region, generally for a period of one to six months. The first senior scholars will be Richard Stanley (MIT) and Bernd Sturmfels (UC Berkeley), who will lead the program in geometric combinatorics at IAS/Park City Mathematics Institute (PCMI) in July, 2004. Nominations for the program are due August 1, 2004.



CMI appointed fifteen Liftoff Fellows in the summer of 2003, the same number as the previous year. Selected from nine institutions across the country, Liftoff Fellows are young mathematicians of exceptional promise who have just completed their Ph.D.

CMI appoints Book Fellows to write monographs on topics of current interest. Among the Fellows supported in 2003 were Yan Soibleman of Kansas State University and Alexander Braverman of Harvard University. Professor Braverman is working on a monograph on D-modules which is expected to appear in late 2004.

Among the Research Programs organized and supported by CMI in 2003 were the following:

- IPM String School and Workshop in Iran.
- Arnold Diffusion, a ten-week program at Princeton University.
- Non-commutative Geometry and Applications, a conference and school at Vanderbilt University.
- Arithmetic, Geometry and Topology of Algebraic Cycles, a conference in Morelia, Mexico.
- Unity of Mathematics, a conference in honor of I.M. Gelfand, Cambridge, Massachusetts.

Workshops & Conferences

High School Students

The 2003 CMI Summer School on Harmonic Analysis, the Trace Formula and Shimura Varieties was held at the Fields Institute in Toronto, June 2–27. 104 participants from more than ten countries attended. See page 19.

Fields Institute Summer School participants. Courtesy of Sonia Houle

The Clay Mathematics Research Academy, directed by Dr. David Ellwood and organized with Vida Salahi, was the first program held at CMI's new offices in Cambridge, Massachusetts. Twelve exceptional high-school students worked on original research problems for ten days with faculty leaders Richard Stanley (MIT) and Roger Howe (Yale), and four graduate and postdoctoral assistants. The program focused on combinatorics and geometry, and drew participants from across the country. CMI supported two student summer programs: PROMYS at Boston University and the Arnold Ross Program at Ohio State University. Both programs encourage talented high-school students to explore mathematics at a deeper level than in their regular courses and to consider mathematics as a career. CMI again presented an award at the USA Mathematical Olympiad ceremonies in Washington, DC, to the student with the most original solution in the American Mathematics Competitions. The 2003 Clay Olympiad Scholar was Tiankai Liu of Phillips Exeter Academy. Kwok Fong Tang, also of Phillips Exeter, and Anders Kaseorg of Charlotte Home Educators Association in Charlotte, NC, each received Honorable Mention.

Clay Research Academy session

Clay Research Academy students (left) and lecturer Sergei Gukov (right)

Olympiad Scholar Tiankai Liu
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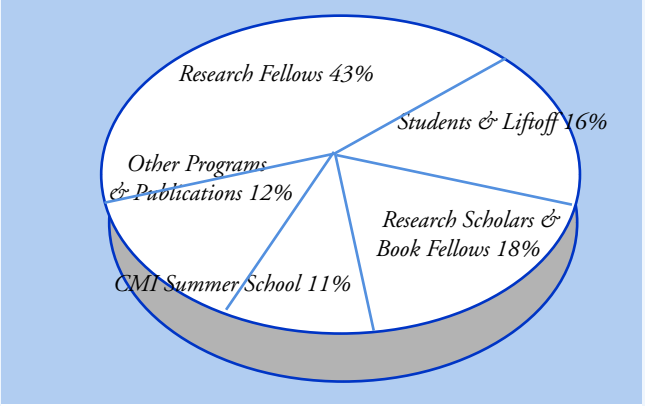
CMI supported a project on dynamical systems at the Institute for Mathematical Sciences at SUNY Stony Brook led by John Milnor. Notable among the activities was a workshop on the work of Grigori Perelman.

Through its only direct grant, CMI provides substantial support to the mathematics program at the Independent University of Moscow (IUM). See p. 8.

The pie chart below sets forth research expenses for the fiscal year ending September 30, 2003, and reflects most of the programs and activities described above.



Research Expenses for Fiscal Year 2003
(comparative allocations change annually based on scientific merit)