Keyfitz Named Director of Fields Institute

In July 2004 Barbara Lee Keyfitz of the University of Houston became the director of the Fields Institute for Research in the Mathematical Sciences in Toronto, Ontario, Canada. She succeeds Ken Davidson, who is returning to the University of Waterloo after a three-year term as director.

A native of Canada, Keyfitz grew up in Toronto and received her bachelor’s degree from the University of Toronto. She went to New York University as a graduate student, completing her doctorate in 1970 under the direction of Peter D. Lax. She has stayed in the United States for her whole career, which has included positions at Columbia University, Princeton University, and Arizona State University. In 1983 she came to the University of Houston, where she is currently a John and Rebecca Moores Professor. She plans to return to her home institution at the end of her three-year term as director.

Her areas of research are analysis of partial differential equations, hyperbolic conservation laws, and their applications.

Over the past ten years Keyfitz has become increasingly involved in Canadian mathematics, and for the past four years she served on the Scientific Advisory Panel for the Fields Institute. “The more I saw of the Fields Institute, the more impressed I was by it,” she said. To be director “is a unique position, a unique opportunity.”

Established in 1992, the Fields Institute is a “visitor’s institute”, meaning that it runs programs bringing in mathematicians for visits of varying lengths. Most activities cluster around semester- or year-long themes, though there are also shorter-term workshops and conferences outside the thematic area. One distinctive feature of the Fields Institute is that it offers courses aimed at graduate students in the thematic areas. The institute has no permanent research staff, although the director and deputy director are encouraged to continue doing research during their tenures. Funding for the institute comes from the Canadian government, from the provincial government of Ontario, and from grants, private donations, and contributions from seven sponsoring institutions. One of those institutions is the University of Toronto, where the Fields Institute is located. Although the institute occupies a university building, it is formally a separate entity from the university.

Besides Fields there are two other major mathematics institutes in Canada: the Centre de Recherches Mathématiques in Montreal and the Pacific Institute of Mathematical Sciences in Vancouver. A couple of years ago, Canada launched the Banff International Research Station (BIRS), which is a conference center for the mathematical sciences. Having begun her mathematics studies in Canada and then having been away for thirty years,
Keyfitz said, “What really struck me is how the institutes have changed how mathematics is done in Canada. It’s wonderful—and it’s appreciated.” In particular the institutes have helped to raise the profile of mathematics within scientific disciplines, as well as the profile of Canadian mathematics on the international scene. She also noted that in Canada the directors of mathematics institutes have come to play a special role in providing scientific leadership and advocacy for the field.

Asked about her plans for her directorship, Keyfitz remarked that “there is a lot I don’t want to change.” The day-to-day operations, for example, “seem to be managed extremely well,” she remarked. “Fields has an excellent staff, which is terrific and which everyone comments on.” The institute has a track record of running high-quality programs and is known for its convenient logistical setup, including access to the excellent libraries at the University of Toronto.

Nevertheless, Keyfitz is bubbling with ideas for things she wants to work on at the institute. She would like to introduce some new areas, such as those at the interface of mathematics and the biological and biomedical sciences. This would be a natural step, as Toronto has a large hospital complex with a sizeable research component. As a frequent visitor to the Institute for Mathematics and its Applications (IMA) at the University of Minnesota, Keyfitz has come to admire the IMA’s thriving program of industrial research. She would like to build upon the Fields Institute’s Commercial and Industrial Mathematics program and expand in new directions. The path is not straightforward, as Canadian companies do not tend to have the large research components found in some U.S. companies. “But this would be an interesting challenge to explore,” she said.

While Toronto is a bustling urban center with a lively mathematical community, there are many parts of Canada that, mathematically speaking, are rather isolated. The Fields Institute plays an important role of bringing the world mathematical community to Canada. “The idea of refreshing the stream of research in Canada by interacting with other countries is an important theme at this institute,” Keyfitz remarked. In this vein she would like to see Fields reach out to mathematicians in Atlantic Canada, which consists of the provinces of Nova Scotia, New Brunswick, Newfoundland, and Prince Edward Island. She also hopes to increase the number of affiliate institutions, perhaps including some in parts of the U.S. that are close to Toronto.

Next year, in addition to being at the helm of the Fields Institute, Keyfitz will begin a two-year term as president of the Association for Women in Mathematics. Her appointment at Fields marks the first time a woman has held the position of director at a national mathematics institute. (In the 1980s Cathleen Morawetz was director of the Courant Institute of Mathematical Sciences at New York University; however, Courant differs from a national mathematics institute in that it functions more like a school of mathematics in offering courses and awarding degrees.) Keyfitz remarked that her becoming director of the Fields Institute will not solve the problems women face in mathematics. Nevertheless, she hopes she can make positive contributions “that might not have exactly the same flavor if they were not done by a woman.”

—Allyn Jackson