MSRI and NSF Math Institutes partner to create new jobs
New mechanism for investing in postdoctoral associates in mathematics brings their talent to new settings, supports career pipeline

BERKELEY, California – The Mathematical Sciences Research Institute (MSRI), along with six other NSF-funded Mathematical Sciences Research Institutes, announces the creation of 45 new one- and two-year positions for young, highly-trained mathematical scientists across the country. In addition to furthering research in all areas of the mathematical sciences, these positions will allow recent Ph.D.s to teach at community colleges and other higher-education institutions or to participate in projects tied to business and industry. This new initiative is a result of a partnership among the National Science Foundation-supported mathematics institutes.

MSRI, based in Berkeley, CA, has awarded ten of these 45 postdoctoral positions—known as NSF Mathematical Sciences Institutes Postdoctoral Fellowships—to the following exceptional, early-career mathematicians: **Vigleik Angeltveit**, who is currently at the University of Chicago, will go to the University of Chicago to work with his mentor, Peter May; **Tristram Bogart**, from Queen's University (Ontario, Canada), will be a Fellow at San Francisco State University and mentored by Federico Ardila; **Scott Crofts**, from the University of Utah, will go to UC Santa Cruz to work with mentor Martin Weissman; **Anton Dochtermann**, who is at the Technische Universität Berlin, will go to Stanford University and work with Gunnar Carlsson; **Christopher Hillar**, currently at MSRI, will be a Fellow at the University of California at Berkeley's Redwood Center for Theoretical Neuroscience working with Fritz Sommer; **Eric Katz**, from the University of Texas, will continue his research in Austin with Sean Keel; **Karl Mahlburg**, at the Massachusetts Institute of Technology, will become a Fellow at Princeton working with mentors Manjul Bhargava and Peter Sarnak; **Sikimeti Ma'u**, also from the Massachusetts Institute of Technology, will go to Barnard College and be mentored by Dusa McDuff; **Abraham Smith**, from Duke University, will go to Quebec's McGill University and work with mentor Niky Karman; and **Jared Speck**, from Princeton University, will use his Fellowship to continue working at Princeton with his mentor Sergiu Klainerman. For profiles of each of MSRI's NSF Postdoctoral Fellows, go to http://www.msri.org/specials/nsfpostdocs.

Academia at Risk

The impact of the economic downturn is being felt everywhere—including academia, where this year has seen widespread hiring freezes and cancelled job searches. For the mathematical community, this has meant almost 400 lost positions for recent Ph.D.s. The severity of the situation became apparent earlier this year when many graduates, even of top-tier programs, were facing unemployment. The NSF, through its seven Mathematics Institutes (including MSRI), responded by creating these new postdoctoral fellowships.

The training of these young scientists represents a long-term investment. The postdocs typically spent five years in graduate education, often with some level of support from state or federal funds.

"These new researchers are primed to make significant contributions to their fields," said Peter March, Director of NSF's Division of Mathematical Sciences.

"These positions not only refine the research skills of new Ph.D.s, but provide them with opportunities to apply their training in other settings," said Russ Caflisch, Director of the Institute for Pure and Applied Mathematics (IPAM). "The role of research along with teaching or industry mentors and professional development workshops reinforces the Institutes' commitment to ensuring the continued success of these young people in the work force."

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Short Timeline

Exactly one month elapsed between the first meeting of the seven Mathematics Institute directors and the close of applications. More than 750 applications were received for the 45 positions. Typically, academic job searches begin in the fall and take several months to complete.

"The timing was perfect," said Eddie Herman, one of the newly hired mathematicians. "Most academic positions are decided by the middle of March, so the Institutes began advertising at exactly the time when many of us were losing hope of finding a research position and were ready to look for other jobs." Herman received his doctorate from UCLA this year.

Pipeline issues

Many U.S. graduate programs have reduced the size of their incoming class. In fact, some programs will not be admitting any students in the next academic year. This will have the effect of diminishing the size of our next generation of scientists, those who would be graduating at a time when our economy is recovering and in need of a highly trained workforce. Currently, many workers are seeking re-training in response to the needs of the changing economy—just as colleges and universities face cutbacks.

"There are problems all along the pipeline," said Marty Golubitsky, Director of the Mathematical Biosciences Institute (MBI). "New Ph.D.s are not finding jobs that make use of their extensive training, and consequently graduate programs are admitting fewer students. This stifling of scientific training in our next generation will make it more difficult for the United States to remain competitive in the future."

Huge Response

"We knew that the job market for young Ph.D.s in mathematics was extremely tight this year, but we were astonished by the number and quality of the applicants for these new positions," said Robert Bryant, Director of the Mathematical Sciences Research Institute (MSRI) in Berkeley, California. More than 750 applications were submitted for the Institutes' postdocs, 400 of which came from people who received their Ph.D. just this year.

"Being able to offer these positions allows us to keep these highly trained people in the workforce and is a great boon for mathematics and for our society," said Bryant.

Diverse Impact

The impact of this program is widespread, with postdocs working in a dozen states nationwide, and in all areas of the mathematical sciences. While continuing their research, a number of Institute postdocs will also apply their training through teaching or industrial partnerships. Among the Fellowships awarded through MSRI, the postdoctoral positions' work will range in fields from pure mathematics to applications to neurobiology.

One of MSRI's ten Fellows is **Sikimeti Ma'u**, originally from Tonga and now a permanent U.S. resident. Sikimeti will pursue research in geometry and topology as a Postdoctoral Fellow at MSRI in 2009-10, and then her NSF Fellowship award will take her to Barnard, which has an historic legacy as a college for women, to be mentored by the distinguished topologist Dusa McDuff. "It's a really exciting opportunity," remarked Sikimeti, "to be at the MSRI while so many leading mathematicians in the field will be there and to be mentored by one of them. I'm very grateful to the NSF and MSRI."

Sikimeti Ma'u has been a role model for other math-oriented students and she has taught math at a variety of levels—from teaching under-achieving high school students on the small South Pacific Island of her homeland to instructing MIT's high-achievers. While an undergraduate at the University of Auckland, she worked with the small group of Maori and Pacific Islanders in the mathematics department to set up a mentoring program for Maori/Pacific Island undergraduate mathematics majors. During her Ph.D. studies at Rutgers, she was also a volunteer mentor to collegiate honor students.

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Christopher Hillar is another of MSRI's new Postdoctoral Fellows, and he will use his NSF award to continue his research at the University of California, Berkeley's Redwood Center for Theoretical Neuroscience. As a Fellow at the Center, which is an interdisciplinary group of researchers working to develop mathematical and computational models for the underlying neurobiological mechanisms in the brain, Hillar will work with his research mentor Fritz Sommer through spring 2011. "I am honored to receive a Mathematical Sciences Research Institutes NSF Postdoctoral Fellowship," said Hillar, who, by training is an algebraic geometer. "This award will allow me to explore foundational problems in mathematical neuroscience, and I hope to use this opportunity to engage other mathematicians in this pursuit."

It was during a summer math program for talented high school students that Hillar was first introduced to the world of mathematics. The following summer, he returned to Southwest Texas State University as a counselor and teacher for other honors students who shared a common interest in mathematics. While Hillar was in college at Yale, he was selected to participate in an intensive research experience for undergraduates at the College of William and Mary. The NSF-funded summer program involved one-on-one interaction with research faculty to solve open problems. This highly productive encounter with deep mathematics resulted in his first four journal publications and in a collaboration with his REU advisor, Charles Johnson, which continues to today. A few years later, he returned to that program as a graduate mentor and advisor to new group of undergraduate researchers.

Christopher Hillar expects that his NSF Fellowship will provide him a rich cross-disciplinary research interaction within the Berkeley mathematical community—between MSRI, UC Berkeley Neuroscience, the Redwood Center, and UCB Mathematics—where the numerous Berkeley colloquia and seminars and proximity to MSRI's activities will afford an outstanding opportunity to collaborate with colleagues across a range of fields. "I am very excited about continuing my mathematical research in such a wonderful and stimulating environment as MSRI," said Hillar.

The seven NSF-funded mathematical sciences institutes, from throughout the United States, that are leading this initiative to create and employ postdoctoral positions include: the Mathematical Sciences Research Institute (**MSRI**, Berkeley, CA), American Institute of Mathematics (**AIM**, Palo Alto, CA), Institute for Advanced Study (**IAS**, Princeton, NJ), Institute for Mathematics and its Applications (**IMA**, Minneapolis, MN), Institute for Pure and Applied Mathematics (**IPAM**, Los Angeles, CA), Mathematical Biosciences Institute (**MBI**, Columbus, OH), and the Statistical and Applied Mathematical Sciences Institute (**SAMSI**, Research Triangle Park, NC).

For more information about MSRI's NSF Mathematical Sciences Institutes Postdoctoral Fellowships, go to http://www.msri.org/specials/nsfpostdocs.

ABOUT MSRI: The **Mathematical Sciences Research Institute (MSRI**, http://www.msri.org), based in Berkeley, CA, is one of the world's preeminent centers for research in the mathematical sciences and has been advancing mathematical research through workshops and conferences since its founding as an independent institute in 1982. More than 2,000 mathematicians visit the MSRI each year, and the Institute hosts about 80 researchers—each a leader in their fields—in residence each semester, many for stays of up to one academic year. The Institute has been funded primarily by the National Science Foundation with additional support from other government agencies, private foundations, academic and corporate sponsors, and individual donors.

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