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# Mathematics Opportunities

## Enhancing the Mathematical Sciences Workforce in the Twenty-First Century

In an effort to increase the number of U.S. citizens, nationals, and permanent residents who are well prepared in the mathematical sciences and who pursue careers in the mathematical sciences and other scientific disciplines, the Division of Mathematical Sciences (DMS) of the National Science Foundation (NSF) has instituted a program called Enhancing the Mathematical Sciences Workforce in the Twenty-First Century. This program builds on the Vertical Integration of Research and Education (VIGRE) program and includes a broadened VIGRE activity as well as additional components for Research Training Groups in the Mathematical Sciences (RTG) and for Mentoring through Critical Transition Points (MCTP) in the Mathematical Sciences.

VIGRE grants are designed to allow departments in the mathematical sciences to carry out innovative educational programs in which research and education are integrated and in which undergraduates, graduate students, postdoctoral fellows, and faculty are mutually supportive. Integrating research and education for graduate students and postdoctoral associates, involving undergraduates in substantial learning by discovery, and developing a team approach are keys to successful VIGRE projects. VIGRE student and postdoctoral associates and their mentors may participate in international research and education collaborative activities, including activities in other countries that are integrated into and benefit the overall VIGRE program at the institution.

The DMS expects to make eighteen or nineteen awards under this program in 2005. The deadline for proposals is **September 16, 2005**. For more information about the program and all of its components, see the website <http://www.nsf.gov/pubs/2003/nsf03575/nsf03575.htm>.

—From an NSF announcement

## NSF Postdoctoral Research Fellowships

The National Science Foundation (NSF) awards Mathematical Sciences Postdoctoral Research Fellowships (MSPRF) for appropriate research in areas of the mathematical sciences, including applications to other disciplines. Awardees are permitted to choose research environments that will have

maximal impact on their future scientific development. Awards are made in the form of either Research Fellowships or Research Instructorships. The Research Fellowship option provides full-time support for any eighteen academic-year months in a three-year period, in intervals not shorter than three consecutive months. The Research Instructorship option provides a combination of full-time and half-time support over a period of three academic years, usually one academic year full time and two academic years half time. Under both options, the award includes six summer months; however, no more than two summer months of support may be received in any calendar year. Under both options, the stipend support for twenty-four months (eighteen academic-year months plus six summer months) will be provided within a forty-eight-month period.

The deadline for applications is **October 19, 2005**. For more information and application instructions, see the NSF website at <http://www.nsf.gov/pubs/ods/getpub.cfm?nsf05510>.

—From an NSF announcement

## NSF Graduate Teaching Fellowships in K-12 Education

The National Science Foundation (NSF) has instituted the Graduate Teaching Fellowships in K-12 Education (GK-12) to support fellowships and associated training that enable graduate students in NSF-supported science, technology, engineering, and mathematics (STEM) disciplines to acquire additional skills that will broadly prepare them for professional and scientific careers in the twenty-first century. Through interactions with teachers in kindergartens through high schools, graduate students can improve communication and teaching skills while enriching STEM instruction in these schools. Expected outcomes include improved communication, teaching, and team-building skills for the fellows; professional development opportunities for K-12 teachers; enriched learning for K-12 students; and strengthened partnerships between institutions of higher education and local school districts.

The deadline for letters of intent is **May 4, 2005**, and full proposals are due **June 2, 2005**. For more details, see <http://www.nsf.gov/pubs/ods/getpub.cfm?nsf05553>.

—From an NSF announcement

## SASTRA Ramanujan Prize

The Shanmugha Arts, Science, Technology, Research Academy (SASTRA), based in the state of Tamil Nadu in South India, has instituted a SASTRA Ramanujan Prize of \$10,000 to be awarded annually to a mathematician not exceeding the age of thirty-two for outstanding contributions in an area of mathematics influenced by the late Indian mathematical genius Srinivasa Ramanujan. Young mathematicians all over the world are eligible for this award. The age limit has been set at thirty-two because Ramanujan achieved so much in his brief life of thirty-two years, and also to encourage doctoral and post-doctoral research.

SASTRA, based in Tanjore in South India, started in 1984 as a college of engineering. It grew considerably in size in a short span of time and began also offering degrees in areas outside of engineering, attaining the status of a university in 2001. In 2003 SASTRA opened the Srinivasa Ramanujan Center and a branch campus in Kumbakonam, the hometown of Ramanujan, and also purchased Ramanujan's home to maintain it as a museum. In this connection SASTRA conducted an international conference in December 2003 in Kumbakonam. The President of India, Abdul Kalam, inaugurated the conference and declared Ramanujan's home a museum and national treasure. SASTRA will conduct an international conference each year in Kumbakonam during December 20–22 to coincide with Ramanujan's birthday which is on December 22.

Starting in December 2005, the SASTRA Ramanujan Prize will be awarded at each of these annual conferences. The winner will be invited to give a talk at the conference. Nominations for the first SASTRA Ramanujan prize must be made by **July 31, 2005**. A panel of experts will select the winner from the nominations. The nomination must include the vita of the nominee, some selected papers, three letters supporting the nomination, and be sent to: SASTRA Ramanujan Prize, Department of Mathematics, University of Florida, Gainesville, FL 32611, USA; or to [sastraprize@math.ufl.edu](mailto:sastraprize@math.ufl.edu). Information is available on the webpage <http://www.math.ufl.edu/sastra-prize/>.

—*Krishnaswami Alladi, University of Florida*

## News from The Fields Institute

The Fields Institute for Research in the Mathematical Sciences has announced its thematic program for the 2005–2006 academic year, on renormalization and universality in mathematics and mathematical physics and on holomorphic dynamics, laminations, and hyperbolic geometry. The fall program, organized by Pavel Bleher, Mikhail Lyubich, and Michael Yampolsky, will aim to give a broad perspective of applications of renormalization ideas. Activities and dates for the fall program on renormalization and universality follow.

*September 13–15, 2005:* Coxeter Lecture Series. Lecturer: Oded Schramm.

*September 20–24, 2005:* Workshop on percolation, Schramm Loewner evolution, and related topics.

*October 18–22, 2005:* Workshop on renormalization and universality in mathematical physics.

*November 29–December 3, 2005:* Workshop on renormalization in dynamical systems.

A second Coxeter Lecture Series will be given by Lai-Sang Young.

The winter semester program, on holomorphic dynamics, laminations, and hyperbolic geometry, is organized by Bruce Kleiner, Mikhail Lyubich, Yair Minsky, Mike Shub, and Michael Yampolsky. The program will focus on the interaction between three-dimensional hyperbolic geometry and holomorphic dynamics. Activities and dates follow.

*January 5–9, 2006:* Workshop on partially hyperbolic dynamics, laminations, and Teichmüller flow.

*March 7–11, 2006:* Workshop on holomorphic dynamics.

*May 23–27, 2006:* Workshop on hyperbolic geometry.

The current year's thematic program on the geometry of string theory will close with a series of Coxeter lectures by Renata Kallosh of Stanford University, May 9–11, 2005. The Strings 2005 conference in string theory will be held at the University of Toronto, July 11–16, 2005. A summer school program in strings, gravity, and cosmology will be held June 20–July 8, 2005, at the Perimeter Institute, Waterloo, Ontario, Canada.

The thematic program for the 2006–2007 academic year will be on cryptography and on geometric applications of homotopy theory. The fall program will be organized by Hugh Williams, Ian F. Blake, Alfred Menezes, Michele Mosca, Kumar Murty, Renate Scheidler, Douglas Stinson, and Ramarathnam Venkatesan. The winter program will be organized by J. F. Jardine, G. Carlsson, and J. D. Christensen.

The Seventh IMACS International Symposium on Iterative Methods in Scientific Computing will be held at the Fields Institute and the University of Toronto May 5–8, 2005. Organizers are Christina Christara, Peter Forsyth, Tamas Terlaky, and Justin W. L. Wang. Invited speakers include Tony Chan, Tom Coleman, Andy Conn, Paul Fischer, Ilse Ipsen, Van Henson, Tim Kelley, Kees Oosterlee, and Andy Wathen.

The Fields Institute Summer School in Operator Algebras will be held at the University of Ottawa, June 7–17, 2005. For details on all Fields Institute activities, see the website <http://www.fields.utoronto.ca>.

—*From a Fields Institute announcement*

## News from Oberwolfach

The Mathematisches Forschungsinstitut Oberwolfach (MFO) has announced its scientific program for 2006. The new program is available on the website <http://www.mfo.de> or <http://www.oberwolfach.org>. There one can also find information on the scheduled weeks for miniworkshops and guidelines for proposals. The deadline for proposals for workshops in 2007 is the **end of July 2005**.

—*MFO announcement*