

## NSF Institutes Create Post-Doctoral Jobs

On May 11, the seven mathematical sciences research institutes funded by the National Science Foundation (see the sidebar) announced that they would be creating 45 new one-year and two-year positions for young mathematical scientists. These positions will combine research and other activities, from teaching at local community colleges to working in industry.

The new initiative is a reaction to the impact of the economic downturn on academia. There have been many hiring freezes and cancelled job searches across the country. For the mathematical sciences, this has resulted in the loss of almost 400 positions for recent PhDs. As a result, many recent graduates, even from top programs, were facing unemployment. The NSF, through the seven Mathematics Institutes, has responded, albeit in a small way, by creating these new postdoctoral fellowships.

The positions were created and advertised rapidly. One month after the first meeting of the institute directors, 750 applications had been received for the 45 available positions. “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.”

Each of the institutes has taken a different approach to these fellowships. Post-docs at the American Institute of Mathematics (AIM), for example, will help to fill a desperate need for math instructors by teaching at De Anza Community College in Cupertino, California, and at San Francisco State University. “I have more than 1000 students on a waiting list for math classes, and no faculty to teach them,” said Jerry Rosenberg, Dean of Physical Sciences, Mathematics, and Engineering at De Anza. Thanks to this initiative, approximately 250 of those students will be able to take a math class from one of the new post-docs at AIM. Their teaching duties will be in addition to the research they will do under the direction of Stanford University faculty.

Through the Institute for Mathematics and its Applications (IMA) in Minneapolis, Mustafa Tural, who trained in statistics and operations research at the University of North Carolina, will intern at Telcordia Technolo-

### The Mathematics Institutes

#### AIM

American Institute of Mathematics

<http://aimath.org>

#### IAS

Institute for Advanced Study

<http://www.math.ias.edu>

#### IMA

Institute for Mathematics and its Applications

<http://www.ima.umn.edu>

#### IPAM

Institute for Pure and Applied Mathematics

<http://www.ipam.ucla.edu>

#### MBI

Mathematical Biosciences Institute

<http://mbi.osu.edu>

#### MSRI

Mathematical Sciences Research Institute

<http://www.msri.org>

#### SAMSI

Statistical and Applied Mathematical Sciences Institute

<http://www.samsi.info>

gies in Piscataway, N.J. He will apply his knowledge to the development of statistical learning methods for creating more efficient algorithms and protocols for communication networks. Prashant Athavale, a post-doc from the Institute of Pure and Applied Mathematics (IPAM) will collaborate with scientists at Placental Analytics, a company that studies the effect of placenta structure on fetal development. The placenta can be used to track fetal development, faithfully retaining information about possible prenatal problems and as a predictor of adult health risks. Athavale will apply his training in image processing to study irregularities of placenta structure and develop models of placental vascular branching.

Among the ten Postdoctoral NSF Fellowships awarded through the Mathematical Sciences Research Institute (MSRI) 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, 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.

At the Statistical and Applied Mathematical Sciences Institute (SAMSI), the new postdoctoral fellows will be joining the existing postdoctoral program, as this ensures that the fellows will become involved in highly interdisciplinary research, a potential key for their future employment. For those interested in an eventual academic position, the appointments will involve teaching at one of the partner universities of SAMSI (Duke University, North Carolina State University, and the University of North Carolina at Chapel Hill).

Jean-Philippe Lessard, currently at Rutgers, has been selected by the School of Mathematics at the Institute for

Advanced Study (IAS) for an appointment at Rutgers beginning in September of 2009. Lessard is developing new techniques to deal with large amounts of data using Morse Homology, an abstract and notoriously difficult-to-calculate notion of algebraic topology. His goal is to make it computable.

Julia Chifman, a postdoc at the Mathematical Biosciences Institute (MBI), will be exploring the genetic relationship between species. The evolutionary history of a group of organisms can be illustrated through graphs called phylogenetic trees. Julia will use her training in algebraic methods to work on the mathematical structure of these trees.

For more information on the NSF Mathematics Institutes and their new program, visit <http://www.mathinstitutes.org> and the web sites of the individual institutes. 🌱

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## Highlights from the 2008 Putnam Competition

By Joseph A. Gallian

The 69th annual Putnam competition, held in December 2008, had 405 teams and 3627 participants from 545 institutions. The number of institutions was a record high, but the number of individual participants was down 126 from the record high in 2007. The four top ranked teams — Harvard, Princeton, MIT and Stanford — were the same as in 2007. Princeton finished second behind Harvard for the eighth time since 1985. Harvard finished first for the 27th time and placed in the top five for the 54th time.

The top fives scores on the 120 point exam ranged from 117 to 101. The score of 117 is the third highest since 1967. A score of 22 was enough to rank in the top 500. The median score was 1. MIT had five out the top 16 finishers and an amazing 48 out the top 189. In keeping with recent trends, four of the top five finishers and eight of the top 16 finishers had previously won Gold medals at the International Mathematics Olympiad.

Sophomores Brian Lawrence of Caltech and Arnav Tripathy of Harvard were repeat Putnam Fellows (top

five finishers) from 2007, while junior Yufei Zhao from MIT matched his top five finish of 2006. Freshman Seok Hyeong Lee from Stanford and sophomore Bohua Zhan from MIT were the other two Putnam Fellows. The Elizabeth Lowell Putnam Prize went to Viktoriya Krakovna of the University of Toronto.

Harvard increased its total number of Putnam Fellows in the 69 competitions to 97. MIT, which has the second highest number of Putnam Fellows over the years, increased its total to 49. Harvard received an award of \$25,000 for finishing first while each Putnam Fellow received \$2,500.

A comprehensive up-to-date history of the Putnam competition is available at <http://www.d.umn.edu/~jgallian/putnam06.pdf>. 🌱