

# Mathematical Sciences Research Institute (MSRI)

MSRI is known and appreciated by mathematicians the world over as one of the largest and most active mathematics research institutes. What might be less well known is that MSRI has also been a leader in promoting diversity in mathematics. By devoting serious attention and resources to diversity issues, MSRI has not only made a difference with the programs and events it has organized but has also sent a powerful signal within the mathematical community that these issues matter.



When he served as MSRI director, William Thurston established in 1993 the Human Resources Advisory Committee (HRAC), making MSRI the first mathematics institute in the U.S. to have such a committee. Today, nearly all U.S. institutes have one. This committee helps to implement MSRI's policy to actively seek diversity in the gender and ethnicity of program and workshop participants. While proposals for MSRI programs are ultimately selected on the basis of scientific merit, every proposal must include a section that addresses diversity issues. Once a program has been accepted, an HRAC liaison is appointed to help the program

committee keep diversity issues on its agenda. The liaison need not be an HRAC member but must work in an area close to the program topic. In addition, the HRAC reviews the proposed composition of program organizing committees and might suggest additional members who can reach out to under-represented groups. Program committees are urged to pay careful attention to ensuring diversity in the program participants right from the start of the planning for the program.

MSRI has several established activities aimed at groups underrepresented in mathematics. One of these is the Conference for African American Researchers in the Mathematical Sciences (CAARMS). This was first established at a meeting at MSRI in January, 1995, between distinguished minority mathematicians, several of them members of MSRI's Human Resources Advisory Committee (HRAC), and then-Director of MSRI Bill Thurston, who volunteered to have MSRI host the first conference that year. Now an annual event, CAARMS has been held several times at MSRI, as well as at universities and other mathematics institutes. The conference showcases current mathematical sciences research done primarily, though not exclusively, by African Americans.

Another highly successful and visible event is the biennial Blackwell-Tapia Conference, which is named after the African American statistician David Blackwell and the Hispanic mathematician Richard Tapia. First held in 2000 and sponsored jointly by MSRI and Cornell University, the conference provides a mix of activities designed to inform the next generation of students about career opportunities in mathematics and to provide a chance for them to network with other students and with mathematical scientists who play a leadership role in their communities. The 2002 Blackwell-Tapia Conference marked the first awarding of the Blackwell-Tapia Prize, which honors a mathematical scientist who has contributed significantly to his or her field of expertise and who has made efforts to address the underrepresentation of minorities in mathematics.

For some time the HRAC had been discussing how to increase participation by minority mathematicians in the institute's programs. Growing out of those discussions are the Modern Mathematics Workshops, which began in 2003. The idea is to have organizers of upcoming MSRI research programs present expository introductions to the areas of the programs. The workshops are open to all but are especially aimed at mathematicians and students from underrepresented minorities, with the goal of sparking their interest in MSRI programs and encouraging them to participate. The workshops were initially sponsored by MSRI and held at minority-serving institutions. Since 2006 they have been held just prior to the annual conference of SACNAS, the Society for the Advancement of Chicanos and Native Americans in Science. In addition, the workshops are now sponsored by all the U.S.-based mathematics institutes, with each institute bringing in speakers to describe its upcoming programs. The workshop reaches a diverse audience of graduate students, postdocs, and midcareer faculty. Most recently, MSRI played a key role developing a collaboration among eight mathematics institutes to run a coordinated series of workshops related to mathematics and diversity. The list of these workshops may be found at <http://www.mathinstitutes.org/diversity.php>.

In addition to the conferences and workshops that occur on a regular basis, MSRI has organized various one-off events that put the spotlight on diversity issues. One of the most important of these was Promoting Diversity at the Graduate Level in Mathematics: A National Forum, held in October 2008. The purpose of the forum was to stimulate, identify, and disseminate successful models that improve retention of underrepresented groups in graduate programs in mathematics. With 130 participants, 20 percent of them graduate students, the forum reached a wide range of individuals across the spectrum of the mathematical sciences, allowing them to share experiences and information and discuss concrete ways to implement diversity programs at their own institutions. The proceedings of the forum appear in a 28-page booklet available on the MSRI website. An article about the forum, "Revisiting the Question of Diversity: Faculties and Ph.D. Programs," by H. G. Grundman, appeared in the October 2009 issue of the *Notices*.

Along with its efforts aimed specifically at minorities underrepresented in mathematics, MSRI also has



paid significant attention to encouraging women in mathematics. In 2005 the institute started a two-day workshop called Connections for Women, and this workshop has now become an established event associated with each MSRI research program. The purpose of the workshop is to bring together the women who will participate in the program, as well as others from outside MSRI with the same scientific interests, so that they can get to know each other and start forming a working cohort. Another important effort has been MSRI's graduate summer schools. MSRI's sponsoring institutions can nominate two students per summer to attend the school or three if at least one is a woman or a member of an

underrepresented group. As a result, MSRI has maintained female representation of 30 percent in its summer schools for the last seven to eight years. This figure is in line with the proportion of women receiving Ph.D.'s in mathematics in the U.S., which has been around 30 percent for the last ten years.



The MSRI Undergraduate Program, called MSRI-UP for short, aims to identify talented students, especially those from underrepresented groups, who are interested in mathematics. Although MSRI-UP shares some similarities with Research Experiences for Undergraduates programs, it is more comprehensive, providing not only research opportunities but also skills and information needed to navigate the path from the math major to graduate school to a career in research. Since its inception in 2006, MSRI-UP has reached over eighty minority students and will likely have a significant impact on the face of the mathematics profession in the future.

By putting its prestige and expertise at the service of groups underrepresented in mathematics, MSRI has helped to make the mathematical community more stimulating and diverse, one that welcomes a wide range of individuals and helps them participate and thrive.

Photos courtesy of MSRI:

Top photo: Spring Opportunities workshop, March 2012 at MSRI

Middle photo: 2007 Connections from Women workshop on Teichmuller; Theory and Kleinian Groups

Bottom photo: Undergraduate students and professors from the 2011 MSRI-UP on Mathematical Finance, pictured with Dr. Myron Scholes, Nobel laureate in Economics