

Mathematics Research Communities Program Kicks Off

Allyn Jackson

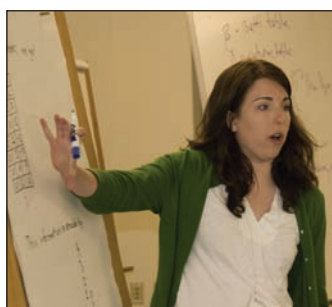


"Talking to so many other young mathematicians with my same interests was very inspiring."

"I felt that this conference is unique in how it allowed me to make connections with others in my field that could easily blossom into working relationships."



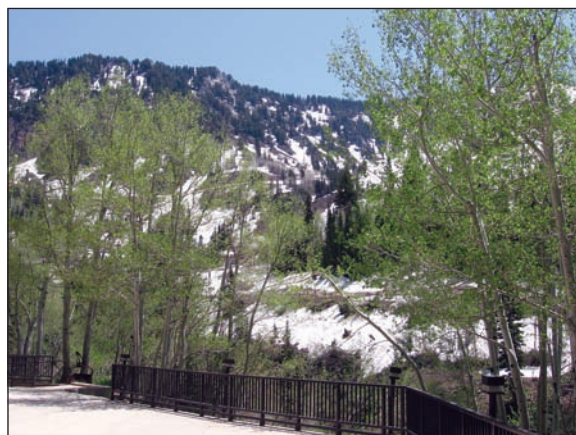
"The conference was wonderful...Many collaborations will come out of it. This is invaluable for young mathematicians like me. Also, it was a lot of fun in a beautiful place."



These are typical comments from participants in Mathematics Research Communities (MRC), an innovative program started by the AMS to help young mathematicians create networks of peers who are interested in similar areas of research. With support from the National Science Foundation, MRC got off the ground in summer 2008 with three 1-week conferences held in Snowbird, Utah. The program also provides means to keep the participants connected during the 2008–2009 academic year. A new set of conferences will be held in summer 2009.



The MRC conferences have a unique structure: They are organized by a small number of senior mathematicians, but all of the participants are graduate students or postdocs. While the organizers are there to keep everything running smoothly and to give some



lectures, most of the activities are in the hands of the participants, who lecture to each other about their work and hold informal sessions for exchanging ideas. Included are professional development sessions covering such topics as how to write a research grant and job search tips. Participants also take responsibility for organizing special sessions at the Joint Mathematics Meetings, they stay in touch during the academic year through electronic discussion networks by research topic, and they are provided with ongoing mentoring by the conference organizers. The AMS is also carrying out a longitudinal study of the careers of the MRC participants. (The quotations in this article are taken from participant responses to questions in an online survey.)

The largest of the three 2008 conferences focused on low-dimensional topology and Teichmüller theory and had about forty participants. The mornings were devoted to expository talks and the afternoons to short presentations by the participants, each of whom gave a talk on their research interests. While the nature and quality of the talks was not uniform, they helped participants to find others with similar interests. "I really appreciated that the conference was meant as a stepping-stone for us to collaborate with others," said one participant. "The short talks...helped us find each other." Another participant commented that the highlight

of the conference came when others sought him out to ask him about his talk. There were also informal sessions that drew many questions and much discussion about what the major open questions are in the area. "The program gave the participants exposure to a nice mixture of elementary topics and current research," one participant said. "I wouldn't change anything."

The two other conferences were smaller, with about twenty participants apiece. The first, which focused on computational algebra and convexity, had two main themes: studying a 2006 paper that contains new ideas and technical tools that would be useful for the students to master, and exploring the use of computational algebra software for computing primary decomposition. The participants broke up into working groups centered on the two themes, and each group made a presentation at the end of the conference. "I appreciated...the chance to wrap it all up into a 'final presentation' of what we had learned," one participant commented. "That really helped crystallize how much progress we had made in a week."



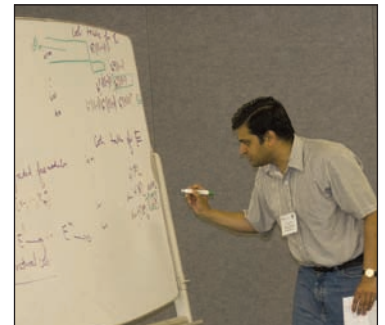
The format of the MRC conferences is very flexible, and early on the organizers realized that having some evening "basic notions" talks would be helpful. These talks were held from 9:00 p.m. to 10:00 p.m. after a long day, but this did not dampen participants' enthusiasm. "We could ask the dumbest questions and get good answers without fear of looking dumb," one participant commented. "It was a great learning environment!"

The third conference was on scientific computing and advanced computation. "Overall the program was one of the best and richest experiences I have had," one of the participants commented. The primary topics discussed were new programming languages for scientific computing, parallel computing, and multiscale analysis. There were several talks by senior researchers, after which the participants carried out group work. One novel feature of this conference was an exercise in grant writing. Participants broke up into groups and selected a project about which to write proposals and chose one group member to be the lead principal investigator. Then each member of the group helped write a "letter of intent" and presentation slides. On the last day of the MRC, groups presented their proposals to a panel of senior researchers. The intensive group work spurred rich interactions among the participants. "The highlight for me was definitely the people," one participant remarked.



"I came not knowing anyone, and left with a whole new community of researchers."

A new crop of MRC participants will join in four conferences to be held in summer 2009, again in Snowbird. The dates and topics of the conferences are: June 13–19, 2009, Mathematical Challenges of Relativity; June 20–26, 2009, Inverse Problems; June 27–July 3, 2009, Modern Markov Chains and Their Statistical Applications; and June 27–July 3, 2009, Harmonic Analysis. For further information about applying, see "Mathematics Opportunities" in this issue of the *Notices* or consult the webpage <http://www.ams.org/amsmtgs/mrc-09.html>. The application deadline is **March 2, 2009**, for participation in the summer 2009 conferences. In addition, organizers are sought for MRC conferences in summer 2010; a call for organizers appeared in the January 2009 issue of the *Notices*, page 87, and is available on the Web at <http://www.ams.org/amsmtgs/mrc-proposals.html>.



—Allyn Jackson

Photographs courtesy of David Eisenbud and Ellen Maycock.