

Guidelines for Proposals

Mathematics Research Communities

Summer 2011

Letter of intent due date: **March 1, 2010**

Proposal due date: **June 1, 2010 CHANGE**

Inquiries should be sent to:

Mathematics Research Communities
American Mathematical Society

Email: mrc2011@ams.org

Mail: 201 Charles Street, Providence, RI 02906

Fax: 401-455-4004

Instructions on how to submit applications will be found at the web site:

<http://www.ams.org/amsmtgs/mrc-proposals.html>

Background on the MRC program

Young mathematicians are often overwhelmed when beginning their research careers. Some receive little guidance about initiating their research programs, either before or after earning their doctorates. Others end up in positions at colleges or universities where research is not a top priority, and so are isolated from other active researchers in their own fields or from any researchers at all. Programs exist at individual institutions and at the national level to assist young mathematicians with teaching and juggling the many demands on their time. Until now, there has been no national program that initiates them into a research community, guiding them to form working relationships with other researchers as they begin life as research mathematicians. The AMS has created such a program, with the support of the National Science Foundation.

The goal of the MRC program is to create research cohorts of young mathematicians that will sustain themselves over time, fostering joint research and coherent research programs that will, eventually, reach all research areas of mathematics. Of course, young mathematicians will be supported in other aspects of their professional careers, through interactions with senior researchers and their peers, gaining advice in subjects ranging from gaining tenure to writing grants. However, it is the formation of research cohorts that

sets this program apart from any other (national) professional development programs for mathematicians that currently exist.

The Mathematics Research Communities program aims to achieve this goal through:

- One-week conferences in each topic area in summer 2011.
- AMS Special Sessions at the Joint Mathematics Meetings in January 2012.
- Discussion networks.
- A mentoring program.
- Longitudinal study.

An introductory article giving background information about the MRC program appeared in the February 2008 *Notices*, and may be found at <http://www.ams.org/notices/200802/tx080200247p.pdf>

Continuation of the MRC program is contingent on the receipt of funds from the National Science Foundation, which has funded the MRC program for the summers of 2008, 2009 and 2010.

Participants and Organizers

The participants in the MRC program will be "peridocctoral" mathematicians—those who are within one to two years before or one to three years after the PhD at the time of the summer conference. Ideally, the mix will not be weighted too heavily in either direction. Organizers should be prepared to encourage qualified young mathematicians to apply. Women and underrepresented minorities are especially encouraged to apply.

Most participants in the MRC program are expected to be U.S. citizens or affiliated with U.S. institutions. In order to encourage the development of community between U.S. students and the strongest students from abroad, each program's organizers may choose up to 15% of the total number of participants who do not satisfy these criteria to participate. However, no qualified U.S. applicant should be turned away to make room for non-U.S. participants. It should be noted that all MRC participants are expected to be active in the follow-up activities such as Special Sessions at the Joint Mathematics Meetings. Travel funds to the summer MRC conference and the subsequent JMM are limited; international participants in 2011 cannot expect to be reimbursed for more than \$600 in travel expenses to the summer conference site. See below for the coverage of on-site room and board costs at Snowbird.

For each conference, there will be a small group of senior organizers: four to five organizers for a conference of forty participants; two to three organizers for a conference of twenty participants. The organizers will choose participants from among the applicants to each program. The senior participants may each give a lecture, but will otherwise attend the conference in a mentoring capacity.

Summer Conference at Snowbird

There will be a one-week conference in each topic area chosen, held at Snowbird, Utah. During the summer of 2011, the tentative dates, including arrival and departure days, are: June 12-18, 2011, June 19-25, 2011 and June 26-July 2, 2011. Participants arrive at Snowbird on the first day, a Sunday; the sessions will run all day on Monday – Friday; and participants depart early on the last date, a Saturday. The focus of these conferences will be on the young mathematicians. These one-week conferences will be either a large conference with approximately forty young mathematicians, or two small conferences run simultaneously that will each include approximately twenty young mathematicians. A conference coordinator from the AMS serves before and on site at the conference to take care of the logistical details. A mathematician from the AMS staff serves as the MRC coordinator, and will also be on site.

Each senior organizer receives a stipend of \$3,000. Additionally, each organizing committee has the option of hiring a graduate student to assist with work before and during the conference, for a stipend of \$3,000. It would also be possible to hire several assistants, and split this amount among them. Any assistant who attends the summer conference is counted as a participant in the program. The program pays for air transportation for all participants and organizers, up to \$600, as well as room and board for the stay at Snowbird. Senior organizers stay in single rooms, and the young mathematicians share doubles. As part of the Snowbird package, participants are provided with transportation by van from the Salt Lake City airport to the resort and back. Participants will arrive at some time on Sunday (note that they are on their own for Sunday night dinner), and will depart on Saturday, after a breakfast provided in the package. All meals beginning with Monday breakfast and ending with Saturday breakfast are included. There will be a hospitality lounge open most evenings, with snacks and beverages available for a small charge.

The MRC program allows the organizers a great deal of flexibility in structuring the week of their conference at Snowbird. Although the main emphasis of the summer conferences will be on the scientific program, it will be important to spend time discussing some professional development topics, such as the job search, writing grant proposals, giving talks or other activities. These topics can be covered in several evening sessions, or incorporated into the scientific program. An AMS staff member will schedule a short session on the various aspects of the MRC program, to be held on the second day of the conference (Tuesday).

The MRC Advisory Board encourages each set of organizers to create a program that works well for the topic and the particular group of participants. During the summers of 2008 and 2009, the different conference organizers planned very different structures to accomplish their goals, yet each of the seven conferences was highly successful.

- The forty participants spent most of the time together, listening to talks given by each other. Two senior postdocs gave several hour-long expository talks on the two topics of the conference. Everyone gave short talks on his or her research: new PhDs

gave 15-minute talks and graduate students gave 5-minute talks. After lunch, the group had an informal period when organizers answered questions from the young mathematicians.

- One group of twenty participants broke into three working subgroups—two studied aspects of a paper, with their participants giving explanatory talks about the paper at the end of the week, and the other subgroup worked on a problem using several software packages. Each participant gave a short (one overhead) talk on the first day to introduce himself or herself. In the evenings, informal —Basic Notions|| sessions were given by participants.
- The second group of twenty began their week giving short talks on their research that were critiqued by the organizers, and the senior organizers gave hour-long talks on several topics.
- In two different conferences, the organizers used an ingenious way to help the participants interact despite their diverse backgrounds: The participants broke into small working groups and prepared grant proposals to be submitted to a fictitious granting agency. This allowed discussions about grant writing as well as creating connections across disciplines.
- At another conference of twenty, the participants broke into three small groups, each working on an unsolved problem. Impressively, one of the problems was completely solved during the conference; the other two groups obtained partial results.
- **Some other ideas from past conferences:**
 1. Choose a topic that teaches fundamental tools.
 2. Select senior postdocs to serve as junior mentors.
 3. If special software is needed, organizers should prepare a DVD for participants to use to install the software when they arrive at Snowbird.
 4. Give participants preliminary exercises to complete before the conference.

An article about the 2008 MRC program was published in the February 2009 *Notices* and can be found at the site <http://www.ams.org/notices/200902/rtx090200224p.pdf> . A collection of photos and quotes from summer 2009 appears at <http://www.ams.org/ams/mrc-2009.html>

After the Summer Conference

The other major events of the 2011 MRC program will be AMS Special Sessions at the Joint Mathematics Meetings (JMM) to be held in Boston, January 4 – 7, 2012. Each group will have a day-long Special Session organized by young mathematicians who are chosen from among the MRC participants. The speakers at the Special Session do not need to be chosen from among the MRC participants. Rather, the Special Session at the JMM is an opportunity for the group to gather again to hear outstanding researchers in the area. There will also be a reunion event at the 2012 JMM for all MRC participants. Partial funding for travel, rooms and meals will be available to participants, Special Session organizers and senior organizers.

There are three additional aspects of the MRC program. First, the AMS will help facilitate the use of electronic discussion groups for each group. Second, the AMS staff will be conducting a longitudinal study on the MRC participants, to determine the long-term impact of the program and also to gather information on career trajectories of young mathematicians in the 21st century. As part of their acceptance into the MRC program, the young mathematicians agree to participate in this survey. Finally, AMS staff will work with the organizers to determine the best way to ensure that all participants are carefully mentored during and after the summer conference.

Application Guidelines

The MRC Advisory Board solicits proposals from the entire spectrum of the mathematical sciences.

Letter of Intent

Letter of intent should include: Organizing committee members, with names, institutions and contact information, and the topic of conference.

*Intent to submit proposal: **March 1, 2010***

Proposal

The proposal should be no more than six pages, and should address the following topics:

1. **Personnel:** The proposal should include a list of organizers, with institutions and contact information. Also, the organizers should indicate if they plan to hire a graduate assistant(s).
2. **Scientific content:** This section should discuss both the scientific background and topic(s) of the proposal, as well as the timeliness (for example, has there been a recent breakthrough in the field).
3. **Objective:** What will the participants take away from the conference?
4. **Nuts and bolts:** This section should be a rough outline of the actual structure of the conference. This need not account for every hour of every day, but should give an outline of how the time will be spent. This is a good place to highlight any novel ideas you have for making the conference a success.
5. **Professional development activities:** The organizers should indicate how they intend to address issues of professional development (such as grant-writing or the job search) during the week.
6. **Other:** Feel free to include other relevant information which you don't feel fits into the categories above. Also welcome are plans for post-conference mentoring of and contact between the junior participants.

The Advisory Board will evaluate the proposals considering the following questions:

- How will the goals of the MRC program be achieved?
- Is the topic appropriate for such a program (sufficiently broad enough to attract a good diversity of participants, yet not generic)?
- Will there be a sufficient number of participants of sufficient caliber?
- Will appropriate mentorship and follow-up be provided?

*Proposal deadline: **June 1, 2010 (Changed!)***

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