

***MATHEMATICAL
SCIENCES RESEARCH
INSTITUTES***

WEBINAR

February 20, 2018

[https://www.nsf.gov/funding/pgm_summ.jsp?
pims_id=5302](https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5302)



AGENDA

➤ Introduction

- Tie Luo, DMS Deputy Division Director

➤ Welcome

- Juan Meza, DMS Division Director

➤ Overview of Program

- Joanna Kania-Bartoszyńska

➤ Proposal Preparation

- Henry A. Warchall

➤ Merit Review/ Solicitation Specific Review Criteria

- Nandini Kannan

➤ Q&A

- Junping Wang



DIVISION OF MATHEMATICAL SCIENCES INSTITUTES PROGRAM: OVERVIEW

- **Two DMS supported institutes were established in 1980; since then, the portfolio has evolved, and DMS now supports several U.S.-based institutes.**
- **Further information about DMS-supported institutes is available at <http://www.mathinstitutes.org/>**



MATHEMATICAL SCIENCES RESEARCH INSTITUTES

National and Community resource

- Serving to advance research in the mathematical science through **programs** supporting discovery and dissemination of knowledge in mathematics and statistics and **enhancing connections** to **related fields** in which the mathematical sciences can play important roles;
- Focusing the attention on **problems** of particular **importance and timeliness**;
- Involving a **broad segment** of U.S.-based mathematical sciences researchers in their activities.



MATHEMATICAL SCIENCES RESEARCH INSTITUTES; IMPACT

- Encouraging research that is **timely** and **potentially transformative**;
- Reaching across the mathematical disciplines, to explore **emerging frontiers** of those disciplines, and to **engage with scientific opportunities in other fields**;
- Supporting the exchange of information with **business, industry, government, and national laboratories**, providing access to expertise in the mathematical sciences;
- Demonstrating leadership in **promoting diversity**;
- Fostering **international collaborations**.



MATHEMATICAL SCIENCES RESEARCH INSTITUTES SOLICITATION

- DMS is particularly interested in proposals that are **creative, demonstrate vision, and involve a broad spectrum of the mathematical sciences.**
- DMS encourages applicants to consider the **structure of the current institutes**; where appropriate, propose **alternative structures** that **complement the existing ones** and **increase the potential to transform the mathematical sciences landscape.**
- *Proposals centered on the interests or advancement of a particular institution are **NOT** appropriate for this program*



SUMMARY

- Describe the **vision** for the proposed institute as a national resource;
- Define the **mission** and **goals** of the institute;
- Indicate the **governance** and **management structure**;
- Provide a plan reflecting a **proactive approach to diversity**;
- Address ways in which **training** of the **next generation** of mathematical scientists will be **integrated with the research program**;
- Discuss plans for **outreach activities** and the **dissemination** of knowledge generated.



WHAT'S NEW IN THE SOLICITATION?

- All Mathematical Sciences Research Institutes apply for **renewal every 5 years**;
- Each competition is **open to applications for new institutes**;
- Proposals in 2019 invited for **new institute projects** from U.S. sites as well as **renewal proposals** from any of the U.S.-based institutes that have had previous funding from NSF.

COMPETITION TIMELINES

- Letter of Intent is required:
 - Deadline: **December 14, 2018**
- Full proposal:
 - Deadline: **March 14, 2019**



PROPOSAL PREPARATION



LETTER OF INTENT

Letter of Intent (required) due December 14, 2018

- Preparation of Letter of Intent
 - ✓ In the Synopsis section, include a brief **overview** of the plans for the institute.
 - ✓ In the Project PI and Senior Personnel section, list the full names and institutional affiliations for **all PIs, Co-PIs, and senior personnel** on the planned project, including any intended subawardees.
 - ✓ In the Participating Organizations section, list all of the institutions involved in the planned project.
 - ✓ If the Project PI and Senior Personnel and Participating Organizations sections do not provide enough space, continuations may be entered in the Other Comments section.



LETTER OF INTENT

Letter of Intent (required) due December 14, 2018

- Review of Letter of Intent?
 - ✓ Letters of intent are required but are **not** subject to merit review -- they are used for NSF planning purposes
 - ✓ Investigators should not expect to receive any feedback on their letters of intent
 - ✓ Submitting a letter of intent does not obligate potential proposers to submit a full proposal

Full proposal due March 14, 2019



PROPOSAL PREPARATION GUIDELINES

Full proposal due March 14, 2019

- Project Description
- Biographical Sketches
- Budget
- Facilities, Equipment, and Other Resources
- Supplementary Documentation



PROJECT DESCRIPTION

Project Description (Limited to 30 pages total)

- **Conception** (This section is not to exceed 20 pages total.)
 - ✓ **Intellectual focus** of the proposed institute
 - ✓ Rationale, **mission and goals**, and **expected impact**
 - ✓ Plans for **future growth** and **resource development**
 - ✓ Steps toward development as a **national resource**
 - ✓ Results of prior NSF support of the institute (if applicable)



PROJECT DESCRIPTION (CONTD.)

➤ Schedule

- ✓ Tentative schedule of scientific activities: Plans for **Year 1** and a provisional schedule for **Years 2 and 3**
- ✓ Plans for a new institute should reflect a "ramp-up" period of up to two years, with a full complement of activities no later than the beginning of Year 3

➤ Human Resource Development

- ✓ Plans for selection and mentoring of **student and postdoctoral participants**, as appropriate
- ✓ Plans for selection and involvement of **researchers at all career levels**

➤ Plans for **Outreach and Dissemination of Outcomes**



BUDGET

- Five-year budget for the proposed activity
- Budget Justification: Please provide a **breakdown** of planned expenditures in composite budget categories such as Participant Support Costs, including projected headcounts for participants
- Include funds to support travel to an annual PI meeting



SUPPLEMENTARY DOCUMENTS

Governance and Management (5 pages)

- **List of individuals** who have agreed to serve as members of a governing board or advisory council
- Mechanisms for **fiscal and management oversight** by a governing board or other group
- Plans for governing/advisory-board membership **terms and succession**
- Mechanisms for **focusing the institute activities**
- Mechanisms for **choosing programs, selecting participants, and allocating funds**
- Mechanisms for recruitment, selection, and appointment involved in **institute leadership succession** and other leadership changes
- Rationale for the proposed management practices

SUPPLEMENTARY DOCUMENTS

Management Plan (5 pages)

- Description of the duties and expected contributions of each individual in the institute leadership team

Broadening Participation (5 pages)

- Plan reflecting the proposed institute's approach to increasing diversity, broadening participation, and encouraging involvement of underrepresented groups
- Description of how this plan will be implemented
- Outline of how the outcomes will be measured

SUPPLEMENTARY DOCUMENTS

Evaluation (5 pages)

- Measures to evaluate progress toward the proposed institute's goals
- Plan for quantitative and qualitative methods to assess the effectiveness and impact of the institute activities

Letters of Collaboration

- Document arrangements of significance for the proposed project, including commitments for space, faculty and staff positions, equipment, and access to facilities
(Letters of support or endorsement and letters of a laudatory nature for the proposed project are **not acceptable**.)

MERIT REVIEW



PHASE I: PANEL AND AD-HOC

- Review by a **panel** of experts from outside NSF, supplemented by **additional ad-hoc (mail) reviews as appropriate**. Standard NSF Review Criterial (Intellectual Merit & Broader Impact) and the Solicitation Specific Review Criteria will be used to evaluate all projects.
- Each proposal will receive at least three written reviews.
- The reviews, together with a summary of the panel discussion, will be made available to the Principal Investigator.
- Those proposals that are considered the most meritorious by the DMS Institutes Management Team will receive **site visits** by a committee of external experts during the second phase of the merit-review process.

PHASE II: SITE VISITS

- A **committee of external experts** will conduct an on-site review of the proposal using the criteria outlined in this solicitation.
- The committee will be asked to formulate a recommendation to either **support or decline** the proposal.
- The committee will have access to the proposal, reviews and the summary of the panel's discussion.
- The **DMS Institutes Management Team** will consider the committee's advice and will formulate a **recommendation to DMS management.**

SOLICITATION SPECIFIC REVIEW CRITERIA



SCOPE AND SIGNIFICANCE

- The **scope** and **significance** of the stated missions and goals of the institute;
- The **likelihood** that the **proposed activities** will be **effective** in meeting the goals;
- The **likelihood** that the proposed institute will attain **significance as a national resource**;
- The likely **overall impact** of the proposed scientific activities on the mathematical sciences.



LEADERSHIP, GOVERNANCE, AND OVERSIGHT

- The **capabilities of the institute leadership**, including management and organizational ability of the proposed director(s), commitment of the proposed leadership team;
- The **potential** of the institutes leadership and advisory teams to **identify and engage with scientific challenges in the mathematical sciences**;
- The **design, structure, and management** of the operation of the institute, including the quality and effectiveness of the management plan;
- Prospects for **recruitment on the national scale** for advisory committees, program organizers, and participants.



BREADTH

- Likely effectiveness of the method of **selection of activities** to develop an overall program of appropriate scientific breadth;
- The prospects for **involvement** of **appropriate subfields** of the mathematical sciences;
- The extent to which **communication and interaction** with other **areas of science and engineering** are fostered;
- The likely **effectiveness** of the method of selection of participants to involve the community on a national scale; recruit and involve participants from a wide range of institution types, demographic types, and career seniority;
- **Institutional commitment** to promoting diversity; quality of the plan to broaden participation in math sciences research.



WORKFORCE DEVELOPMENT

- The quality and appropriateness of the institute's **training activity**, especially **plans to attract, involve, and mentor graduate students and early-career researchers**.



DISSEMINATION AND OUTREACH

- The likely effectiveness of **plans for dissemination of outcomes**;
- The likely effectiveness of plans for **support of remote participation** in institute activities, where appropriate;
- The likely effectiveness of plans for **outreach to the general public**, if appropriate.



EVALUATION AND ASSESSMENT

- The quality of formative evaluation plans -- plans for **ongoing assessment** (of all institute activities) used to **inform and improve** both daily institute activities and **long-range institute planning**;
- The quality of the plans for summative evaluation of progress toward the proposed institute's goals, including plans for **gathering quantitative and qualitative data** in support of evaluation practices, for **follow-through**, and for **tracking** of participants.



RESOURCES AND INFRASTRUCTURE

- The **reasonableness** and **appropriateness** of the budget;
- The quality and likely **effectiveness of plans for future institute growth** and resource development;
- The quality and appropriateness of the **infrastructure support for the institute** (including, but not limited to, **space, administrative staff, equipment, and access to facilities**) and the **suitability of location** with regard to office space, laboratory space if needed, computing environment, access to library facilities, transportation and housing.



RESULTS UNDER PRIOR INSTITUTE SUPPORT

- The **quality of prior activities** conducted with current or prior NSF support under Mathematical Sciences Research Institutes program awards with start date in the past five years.



CONTACT INFORMATION

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