

***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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