

***MATHEMATICAL SCIENCES  
RESEARCH INSTITUTES***

***WEBINAR***

***November 6, 2023***

***12:00 – 1:00 PM***

***Eastern Standard Time (GMT-05:00)***

***The webinar will start shortly***

***<https://new.nsf.gov/funding/opportunities/mathematical-sciences-research-institutes>***



# AGENDA

- **Introduction**
- **Welcome**
- **Overview of Program**
- **Proposal Preparation**
- **Merit Review/ Solicitation Specific Review Criteria**
- **Q&A (Please submit questions via the Q&A box available in Zoom)**



# DIVISION OF MATHEMATICAL SCIENCES INSTITUTES PROGRAM HISTORY AND OVERVIEW

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



# DMS INSTITUTES PROGRAM OVERVIEW

- Each competition is **open to applications for new institutes;**
- Proposals in 2024 are 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.
- Estimated **Number of Awards**: 5 to 8
- Anticipated Funding Amount: \$40,000,000

# DMS INSTITUTES PROGRAM OVERVIEW

## National and Community resource

- Institutes should advance research in the mathematical sciences through programs supporting **discovery and dissemination of knowledge** in mathematics and statistics and enhance connections to related fields in which the mathematical sciences can play important roles.
- Institutes should involve a **broad segment** of US-based mathematical sciences researchers in their activities and **expand the talent base** engaged in mathematical research in the US.



# DMS INSTITUTES PROGRAM OVERVIEW

- Encourage research that is **timely** and **potentially transformative**
- Facilitate rapid and broad **dissemination** of new ideas
- Provide **opportunities for outreach** to the scientific community and the public at large
- Increase the **impact of the mathematical sciences in other disciplines**
- Demonstrate leadership in **promoting diversity** in the mathematical sciences
- Foster **international collaborations**



# DMS INSTITUTES PROGRAM OVERVIEW

Provide intellectual infrastructure for

- Reaching across the mathematical disciplines and exploring **emerging frontiers** of those disciplines
- Engaging with **scientific opportunities in other fields** at the interface of the mathematical sciences
- Supporting the exchange of information with **business, industry, government, and national laboratories**
- Providing **opportunities for students and postdoctoral fellows** to interact with leading researchers

# MATHEMATICAL SCIENCES RESEARCH INSTITUTES SOLICITATION

- DMS is particularly interested in proposals that are **creative** and **demonstrate vision**.
- 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.





# COMPETITION TIMELINE

- Proposal Deadline: **March 14, 2024**
- Review Panel: **May-July 2024**
- (Reverse) Site Visit: **Fall 2024**
- Award recommendation and budget negotiation:  
**Winter 2024**



# PROPOSAL PREPARATION



# OVERVIEW

- 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** and **broadening participation**
- 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



# PROPOSAL PREPARATION GUIDELINES

**Proposal due date: March 14, 2024**

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



# PROJECT DESCRIPTION

## Project Description (Limited to 30 pages total)

- **Institute Concept** (this section is not to exceed 20 pages total), including:
  - **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



# PROJECT DESCRIPTION (CONTD.)

## ➤ Broader Impacts Section

### ✓ **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**

✓ **Additional broader impacts** of the project



# 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**. Each proposal will receive at least three written reviews.
- **Standard NSF Review Criteria** (Intellectual Merit & Broader Impact) and the **Solicitation Specific Review Criteria** will be used to evaluate all projects.
- 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 a (reverse) **site visit** during the second phase of the merit review process.

# PHASE II: (REVERSE) SITE VISITS

- A **DMS committee** (that may include external experts) will conduct an additional review of the proposals using the criteria outlined in this solicitation
- The review will involve an **interview with the principal investigator** and other relevant personnel from the proposed institute
- The committee will have access to the proposal, reviews and the summary of the panel's discussion.
- The committee will be asked to formulate a recommendation to either **support or decline** the proposal
- 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 institute's 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
- The level of the **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 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

## DMS Institute Management Team

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# QUESTIONS?

(Use the Q&A feature)

