

# **Division of Mathematical Sciences (DMS)**

## **Virtual Office Hour**

### **Date: May 14, 2021**

Welcome to the DMS Virtual Office Hour. We will begin soon.

Please submit questions via the Q&A box  
available to you on Zoom.



# Division of Mathematical Sciences (DMS)

## Welcome to our Virtual Office Hours!

Program Directors in attendance today

- Juan C. Meza (Division Director), Henry Warchall (Deputy Division Director)
- Andrew Pollington, Victor Roytburd (MSPRF)
- Victor Roytburd (MPS-Ascend)
- Tomek Bartoszynski (MPS-LEAPS)
- Zhilan Feng, Ravi Shankar (how to write compelling proposals)
- Special guest: Kathleen McCloud (LEAPS-MPS, MPS-Ascend)

Moderators: Chris Stark, Michelle Manes, Malgo Peszynska

### Subscribe to DMSNEWS:

Send email to [listserv@listserv.nsf.gov](mailto:listserv@listserv.nsf.gov)

In the body of the message, put the following command:  
subscribe dmsnews [your name]

### Suggest a topic for future VOH:

Send email to [dms-voh@nsf.gov](mailto:dms-voh@nsf.gov)



# Division of Mathematical Sciences (DMS)

## Questions during VOH:

- Submit your questions via the Q&A box
  - Questions can be submitted anonymously.
  - We will focus on questions of interest to a wide audience.
  - For specific questions about a particular project, contact a cognizant Program Officer.
- For recently asked questions/copy of slides, see <https://www.nsf.gov/mps/dms/presentations.jsp>
- Next DMS Virtual Office Hour: Friday, June 18, 2PM EDT
  - Topics include: Analysis and Statistics programs; REU program.
  - Questions can be submitted in advance on the registration form.



# Division of Mathematical Sciences (DMS)

## Virtual Office Hour Topics today:

- Update from the Division Director.
- Mathematical Sciences Postdoctoral Research Fellowships (MSPRF).  
[https://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=5301](https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5301)
- Mathematical and Physical Sciences Ascending Postdoctoral Research Fellowships (MPS-Ascend). [https://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=505879](https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505879)
- Launching Early-Career Academic Pathways in the Mathematical and Physical Sciences (LEAPS-MPS) [https://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=505892](https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505892)
- A brief presentation “Tips how to write compelling proposals”.
- Q&A



# Division of Mathematical Sciences (DMS)

## Opportunities and upcoming deadlines:

- Funding opportunities

<https://www.nsf.gov/funding/programs.jsp?org=DMS>

- Upcoming deadlines link

[https://www.nsf.gov/funding/pgm\\_list.jsp?ord=date&org=NSF&sel\\_org=DMS&status=1](https://www.nsf.gov/funding/pgm_list.jsp?ord=date&org=NSF&sel_org=DMS&status=1)

- Upcoming due dates

- RTG: June 1
- LEAPS-MPS: June 14
- MPS-Ascend: June 15
- CAREER: July 26
- ADVANCE: Letter of Intent August 2
- REU: August 25



# DMS Division Director Update

## May 14, 2021

- COVID-19 related supplements; target date May 21
- New MPS DCL on AI (ADAPT)  
Advancing Discovery with AI-Powered Tools (ADAPT) in the  
Mathematical and Physical Sciences  
<https://www.nsf.gov/pubs/2021/nsf21080/nsf21080.jsp>
- Other DMS news



# The Mathematical Sciences Postdoctoral Research Fellowships (MSPRF) program

- SOLICITATION NSF-[16-558](#)  
[HTTPS://WWW.NSF.GOV/FUNDING/PGM\\_SUMM.JSP?PIMS\\_ID=5301](https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5301)
- DEADLINE: OCTOBER 20, 2021
- [How to Apply: Instructions for MSPRF Proposal Submissions](#)
  
- CONTACTS: ANDY POLLINGTON (ADPOLLIN@NSF.GOV)  
VICTOR ROYTBURD (VROYTBUR@NSF.GOV)
  
- PURPOSE. To support future leaders in mathematics and statistics by facilitating their participation in postdoctoral research environments that will have maximal impact on their future scientific development.



# MSPRF: Eligibility

Must meet all criteria:

- a. Be a U.S. citizen, U.S. national, or a legally admitted permanent resident;
- b. Hold PhD no more than 2 years as of January 1 of the year of the award;
- c. Propose research in an area of mathematics or statistics;
- d. Never been a PI or co-PI of an NSF award (except graduate research fellowship or a conference or workshop grant);
- e. May not submit a research plan duplicated in another NSF proposal;
- f. Must not have previously been offered an award by the MSPRF program; and
- g. Must have a doctoral degree conferred before the postdoctoral appointment start date.



# MSPRF: Fellowship Options

1. **Research Fellowship:** full-time support for any eighteen academic-year months in a three-year period;
2. **Research Instructorship:** full-time and half-time support over a period of three academic years, allowing the Fellow to gain teaching experience during the two half-time academic years.

Under both options the award includes six summer months of support.

In both cases, the **total Fellowship amount** is \$150,000:

- monthly stipend (\$5,000 full-time / \$2,500 half-time) paid directly to the Fellow.
- research allowance of \$12,000 is paid as a lump sum to the Fellow.
- annual benefit allowance of \$9,000 (health insurance, etc.)



# MSPRF Proposal: Key Components (summary)

- **Project Summary (1 page limit)** of the proposed research and training activities, including specific and separate statements in the Overview, Intellectual Merit, and Broader Impacts sections;

- **Project Description (5 page limit)**, which addresses what the applicant hopes to accomplish during the fellowship period and how it relates to the applicant's career goals; a justification of the choice of sponsoring scientist and host institution; and a separate section within the narrative that discusses the broader impacts of proposed activities.

**Three or four letters of reference:**

- One reference letter from the doctoral adviser.

**The sponsoring scientist letter.**



# MPS-Ascend: Excellence through Diversity

- [HTTPS://WWW.NSF.GOV/FUNDING/PGM\\_SUMM.JSP?PIMS\\_ID=505879](https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505879)
- SOLICITATION ([NSF 21-573](#))
- DEADLINE: JUNE 15, 2021
- CONTACT: VICTOR ROYTBURD (VROYTBUR@NSF.GOV)
- Purpose. To support postdoctoral Fellows who will broaden the participation of underrepresented minorities in MPS fields in the U.S., including Blacks or African Americans, Hispanics, Latinos, and Native Americans (to include Alaska Natives, Native Hawaiians or other Native Pacific Islanders) enabling Fellows to develop as future leaders in science.

Applicants **are not required** to be members of groups indicated above.

Applicants **must have a substantive plan** to broaden participation of these URM in MPS fields. Evidence of previous interest and participation in activities that broaden participation of these groups is desirable.



# MPS-Ascend: Eligibility

- Proposals are submitted by the potential postdoc (not postdoc mentor).
- Must be U.S. citizens (or nationals) or permanent residents when the proposal is submitted.
- Must have a doctoral degree conferred before starting postdoctoral tenure.
- Must not have submitted a fellowship proposal concurrently to another NSF program or to a similar program in another Federal agency (e.g., DOE, NASA).
- It is anticipated that the Fellow will conduct research at an institution different from their PhD-granting or current postdoctoral institution. If Fellow proposes to remain at current institution, proposal should strongly justify how this choice benefits their research and career development.



# MPS-Ascend: Duration and Level of Support

Up to 36 Months (minimum 12 months)

Award amount of \$100,000 per year (paid directly to Fellow) includes:

- A monthly stipend of \$5,833 (up to \$70,000 annually)
- An annual allowance of \$30,000 for:
  - a) expenses directly related to the conduct of the research and/or
  - b) support of fringe benefits, dependent care, and moving expenses.

Up to 2 months of paid leave over 36 months. Cannot be used to increase duration or level of NSF support.



# MPS-Ascend Proposal: components (summary)

## **Project Description (10 pages):**

- What will be accomplished and how it relates to the Fellow's career goals.
- How the applicant and project will serve to broaden the participation of URMs in MPS fields (detailed, >1 page).
- Importance of research within the context of MPS field(s)

## **Sponsoring Scientist Statement (3 pages), which describes:**

- Sponsor and host institution's environment; a substantive mentoring plan; the match between fellow and sponsor, and MORE ...

## **Two or three letters of reference:**

- One reference letter from the doctoral adviser
- Other letter(s) from scientist(s) who know(s) the applicant and/or the applicant's research well.

The sponsoring scientist may not provide a reference letter, unless they are also the applicant's doctoral adviser. (uploaded by the candidate, so not confidential)

**If applicable, Letters of Collaboration.**



# LEAPS-MPS: Launching Early-Career Academic Pathways in the Mathematical and Physical Sciences

<https://www.nsf.gov/pubs/2021/nsf21570/nsf21570.htm>

Program Officer for DMS: Tomek Bartoszynski (DMS) [tbartosz@nsf.gov](mailto:tbartosz@nsf.gov)

**Submission Deadline: June 14, 2021**

## Eligibility:

- Principal Investigators must be early in their careers, that is tenure track but pre-tenure.
- Must not have been a PI, co-PI on an NSF research grant, with the exception of Fellowship, Conference/Workshop, Equipment, Travel and Instrumentation proposals
- Principal Investigators must be U.S. citizens or U.S. permanent residents at the time of proposal submission.



# LEAPS-MPS: Overview

- **Intent:** initiating viable independent research programs for researchers attempting to launch their research careers.
- **Goal:** achieving excellence through diversity and broadening participation to include members from groups underrepresented in the Mathematical and Physical Sciences.
- **Emphasis:** helping to launch the careers of pre-tenure faculty at minority-serving institutions (MSIs), predominantly undergraduate institutions (PUIs), and R2 universities. **This is not an institutional eligibility requirement.**



# LEAPS-MPS proposal key components (summary)

**Project Description** (max 15 pages).

1. Overall research goals (**brief**). Proposed activities (**detailed**) including relationship to longer term research goals.
2. A specific plan to increase (1) the participation of scientists from underrepresented groups in the areas of the Mathematical and Physical sciences supported by MPS, and (2) the numbers of such individuals that serve as role models for the scientific workforce of the future.

**Institution Letter:** (from the department chair or dean pledging their support).

**LEAPS-MPS Impact Statement** (3 pages): describes

1. the likely impact on the institutional research environment, especially in terms of enhancing research capabilities,
2. the impact on the career of the faculty participant, and on the ability of the involved department to better prepare students for entry into advanced-degree programs and/or careers in science and engineering, including any provisions that will increase the participation of groups underrepresented in science and engineering.



# Division of Mathematical Sciences (DMS)

## Tips for new PIs: Basics of the Process

- **NSF:** funding opportunity
- **PI:** submit proposal to program
- **Program officers:** arrange for review (panel, ad-hoc, internal)
- **Reviewers / panel:** give advice
- **Review criteria:**
  - Intellectual merit
  - Broader impacts
- **Program Officers:** make recommendation
- Higher level review
- **PI:** receives award or declination with feedback
- Whole process: 6 months for most decisions



# Division of Mathematical Sciences (DMS)

## Tips for new PIs: Do this!

- Read & follow PAPPG & solicitation
- Start early / proofread carefully
- Put your research in context
- Do the background work
- Be specific:
  - “Question”
  - “Conjecture”
  - “Target Theorem”
  - What tools & approaches you’ll use
  - Also for Broader Impacts!
- Be ambitious but realistic
- Write for the reviewers
  - Experts in your general field
  - Reading **a lot** of proposals
- Get help / mentorship
- Read reviews & other feedback
- Answer:
  - Why this research?
  - Why you?
  - Why now?



# Division of Mathematical Sciences (DMS)

## Tips for new PIs: Don't do that!

- Start at the last minute
- Be vague:
  - “Investigate”
  - “Explore”
  - “Study”
- Dive into technicalities
- Fake it / lip service
  - “potential applications to cryptography”
  - “mentor students from under-represented groups”
- Do the next obvious step
- Neglect broader impacts
- Misunderstand broader impacts
  - Not applications to other areas of math or science
  - Not everyday duties of faculty
  - Not collaborating with women

**Most of all, don't give up!**



# Virtual Office Hour: Questions from registration

## 1. General questions:

- A. Supplement requests: is there a citizenship requirement? How to apply?
- B. Will the LEAPS and Ascend programs continue beyond this year?
- C. Who do I contact to evaluate my CAREER white paper?
- D. My tenure track position starts Sep. 2021. Can/should I apply to CAREER or LEAPS?

## 2. MSPRF:

- A. I will complete PhD in 2 years. Am I eligible?
- B. I completed PhD in 2016. Am I eligible?
- C. I would like to apply to be a post-doc in France. Am I eligible?

## 3. MPS-Ascend and LEAPS-MPS:

- A. I am a visiting assistant professor/postdoc in US. Can I apply for MPS-Ascend or for LEAPS?
- B. I would like to be a post-doc in Canada. Can I apply to MPS-Ascend?
- C. I am involved in mathematics education research. Am I eligible for MPS-Ascend or LEAPS?
- D. Can someone from R1 university apply to LEAPS-MPS?
- E. Can I apply for Ascend in June and MSPRF in October?
- F. Can I apply for both LEAPS and CAREER in the same year?
- G. When will we be notified about Ascend? How does that work with the academic year & job market. (If I'm already in a job in the fall, do I have to leave it suddenly in the spring?)



# Division of Mathematical Sciences (DMS)

## Virtual Office Hour: Thank you

- For slides and recently asked questions, see <https://www.nsf.gov/mps/dms/presentations.jsp>
- Submit questions/suggestions to [DMS-VOH@nsf.gov](mailto:DMS-VOH@nsf.gov)
- Submit questions through event registration form
- For specific questions about your project, contact a Program Officer
- For future Virtual Office Hour topics, see [https://www.nsf.gov/events/index.jsp?org=NSF&event\\_type=12&orgToSearch=MPS&month=&year=2021](https://www.nsf.gov/events/index.jsp?org=NSF&event_type=12&orgToSearch=MPS&month=&year=2021)
- Next DMS VOH: Friday, June 18, 2PM EDT
  - Topics include: Analysis and Statistics programs; REU program.
  - Questions can be submitted in advance on the registration form.



# **Division of Mathematical Sciences (DMS)**

**Virtual Office Hour**  
**extra slides to follow**



# MSPRF Proposal: Key Components (detail)

- **Project Summary (1 page limit)** of the proposed research and training activities, including specific and separate statements in the Overview, Intellectual Merit, and Broader Impacts sections;
- **Project Description (5 page limit)**, which addresses what the applicant hopes to accomplish during the fellowship period and how it relates to the applicant's career goals. The Project Description consists of:
  - an introduction or background section;
  - a description of past accomplishments;
  - a statement of research objectives, methods, and significance;
  - an explanation of how the fellowship activities will enhance the applicant's career development;
  - a justification of the choice of sponsoring scientist and host institution; and
  - a separate section within the narrative that discusses the broader impacts of proposed activities.
- **References Cited** (no page limit);

## **Three or four letters of reference:**

- One reference letter from the doctoral adviser
- The sponsoring scientist letter.



# MPS-Ascend: Broadening Participation of URMs

- Underrepresented Minorities (URMs) – Blacks or African Americans, Hispanics, Latinos, and Native Americans (incl. Alaska Natives, Native Hawaiians or other Native Pacific Islanders) – are strongly encouraged to apply.
- Applicants **are not required** to be members of groups indicated above.
- Applicants **must have a substantive plan** to broaden participation of these URMs in MPS fields. Evidence of previous interest and participation in activities that broaden participation of these groups is desirable.



# MPS-Ascend Program: How To Apply

1. Read the solicitation ([NSF 21-573](#)) in full, especially the parts that describe what is required in the proposal. Follow guidelines in the NSF Proposal & Award Policies & Procedures Guide (PAPPG; [NSF 20-1](#)); where requirements in solicitation differ from ones in PAPPG, the solicitation takes precedence.
2. Reach out to potential postdoc mentors. To apply, you and a mentor will need to have a well-developed project and mentoring plan in hand.
3. Ask questions (after reading the solicitation)! There are contacts within each MPS Division and at OMA who are happy to help.

Submit via NSF FastLane or grants.gov. FastLane submission is strongly recommended because these are Fellowships with unique requirements. If submitting through Grants.gov, affirm that ALL required documents have been successfully uploaded into FastLane by the deadline date. Otherwise, proposal will be considered incomplete or late and will be returned without review.



# MPS-Ascend: MPS team and contacts

HARSHAL GUPTA, AST, (703) 292-5039, [HGUPTA@NSF.GOV](mailto:HGUPTA@NSF.GOV)

REBECCA PEEBLES, CHE, (703) 292-8809, [RPEEBLES@NSF.GOV](mailto:RPEEBLES@NSF.GOV)

GUEBRE X. TESSEMA, DMR, (703) 292-4935, [GTESSEMA@NSF.GOV](mailto:GTESSEMA@NSF.GOV)

VICTOR ROYTBURD, DMS, (703) 292-8584, [VROYTBUR@NSF.GOV](mailto:VROYTBUR@NSF.GOV)

EDMUNDO J. GARCIA-SOLIS, PHY, (703) 292-4493, [EJGARCIA@NSF.GOV](mailto:EJGARCIA@NSF.GOV)

KATHLEEN V. MCCLOUD, OMA, (703) 292-8236, [KMCCLOUD@NSF.GOV](mailto:KMCCLOUD@NSF.GOV)



# MPS-Ascend Proposal: Key Components; details (1)

Project Description (10 pages), which addresses:

- What the postdoctoral Fellow proposes to accomplish during the fellowship period and how it relates to the Fellow's career goals.
- A detailed description of how the applicant and project will serve to broaden the participation of URM's in MPS fields. (> than one page)
- How the proposed research is important within the context of MPS field(s)



# MPS-Ascend Proposal: Key Components; details (2)

Sponsoring Scientist Statement (3 pages), which describes:

- How the sponsor and host institution will provide a vibrant and supportive environment for the Fellow's proposed research and training activities and provide a basis for the Fellow's future independent research career.
- A substantive mentoring plan, including experience and track record of mentoring postdocs and/or mentoring URMs, as well as broadening participation.
- Agreement to support applicant in cohort building and professional development (may be external to host institution).
- Applicant's research achievements and goals and how they align with those of the sponsor.
- Suitability of the match between fellow and sponsor.

*The statement should be co-signed by the sponsoring scientist and the department chair (or equivalent) at the host institution.*



# MPS-Ascend Proposal: Key Components; details (3)

Two or three letters of reference:

- One reference letter from the doctoral adviser
- Other letter(s) from scientist(s) who know(s) the applicant and/or the applicant's research well.

*The sponsoring scientist may not provide a reference letter, unless they are also the applicant's doctoral adviser. (uploaded by the candidate, so not confidential)*

If applicable, Letters of Collaboration (e.g., those required for access to equipment at national labs or facilities, or access to a collaborator, etc.)



# LEAPS-MPS proposal key components (1)

**Project Description** (not to exceed 15 pages) should contain:

1. A brief description of the overall research goals.
2. A detailed description of the proposed activities.
3. The relationship of the proposed activities to the PI's projected longer term research goals.
4. A specific plan that shows how the proposed activities will increase (1) the participation of scientists from underrepresented groups in the areas of the Mathematical and Physical sciences supported by MPS, and (2) the numbers of such individuals that serve as role models for the scientific workforce of the future.

**Institution Letter:**

The submitting institution must provide a letter from the department chair or dean pledging their support for the proposed activities. If the PI is not in a tenure-track appointment, the institution must state its contractual agreement with the PI if the appointment period and requested grant award dates are not congruent.



# LEAPS-MPS proposal key components (2)

## **LEAPS-MPS Impact Statement (3 pages):**

This statement is an opportunity to provide information that will help a reviewer assess:

- i) the likely impact of the proposed project on the institutional research environment, especially in terms of enhancing research capabilities,
- ii) the impact on the career of the faculty participant, and on the ability of the involved department to better prepare students for entry into advanced-degree programs and/or careers in science and engineering, including any provisions that will increase the participation of groups underrepresented in science and engineering.

