Division of Mathematical Sciences (DMS)
Virtual Office Hour
Date: March 22, 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)

- Eun Heui Kim, Christian Rosendal (Infrastructure)

- Pedro Embid, Tiziana Giorgi, Eun Heui Kim (Applied Math)

- Eun Heui Kim, Huixia (Judy) Wang (Scale MoDL)

- Tomek Bartoszynski, Yuliya Gorb, Ravi Shankar, and others (CAREER)

- Moderators: Michelle Manes, Christopher Stark

Subscribe to DMSNEWS:

Send email to 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

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, April 23 at 1PM EDT

  - Topics include: RTG, CDS&E-MSS, and Probability programs.
  - 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.

- Infrastructure.
  https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=12756

- Applied Math.
  https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5664

- Scale MoDL.
  https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5664

- CAREER.
  https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503214

- 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

- Upcoming due dates
  - ADVANCE: Organizational Change for Gender Equity in STEM Academic Professions (ADVANCE): April 22
  - Mathematical Sciences Infrastructure Program : May 11
  - Stimulating Collaborative Advances Leveraging Expertise in the Mathematical and Scientific Foundations of Deep Learning (SCALE MoDL) : May 12
  - Research Training Groups in the Mathematical Sciences (RTG) : June 1

DMS Division Director Update
March 22, 2021

- Recent News

- COVID-19 Impacts

- DMS Response

Division of Mathematical Sciences (DMS)
Mathematical Sciences Infrastructure Program

Infrastructure program:

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=12756&org=DMS&from=home

Supports:

1. Novel projects that serve to strengthen the research infrastructure,
2. Training projects (not fitting other programs),
3. Conferences, Symposia, Working Research Sessions and Travel Support   Requests (not fitting other programs).

Program Officers:

Swatee Naik snaik@nsf.gov

Tomek Bartoszynski tbartosz@nsf.gov

Eun Heui Kim eukim@nsf.gov

Christian Rosendal crosenda@nsf.gov

Deadline: May 11, 2021

Division of Mathematical Sciences (DMS)
Applied Mathematics Program

- **Website:**

  https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5664

- **Program Officers for DMS:**
  Victor Roytburd (vroytbur@nsf.gov)
  Pedro F. Embid (pembid@nsf.gov)
  Eun Heui Kim (eukim@nsf.gov)
  Tiziana Giorgi (tgiorgi@nsf.gov)

- **Submission Deadline:** November 15, 2021 **(PD 16-1266)**
  Submission Window: November 1, 2021 – November 15, 2021

Division of Mathematical Sciences (DMS)
Applied Mathematics Program (cont.)

- The program supports mathematics research motivated by or influencing problems arising in science and engineering.

- Important factors:
    - ➤ Mathematical merit and novelty
    - ➤ Breadth and quality of impact on applications

- Proposals whose primary applications are in the biological sciences are inappropriate for Applied Mathematics

- To find awards funded by this program:

    - ➤ Go to the NSF award search engine (advanced search):

      https://www.nsf.gov/awardsearch/advancedSearch.jsp
    - ➤ Enter Element Code: 1266
    - ➤ Enter a time window, e.g., 10/01/2019 - 09/30/2020

Stimulating Collaborative Advances Leveraging Expertise in the Mathematical and Scientific Foundations of Deep Learning (SCALE MoDL)

- **Website:** https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505873

- **Program Officers for DMS:**
  Eun Heui Kim   (eukim@nsf.gov)
  Christopher W. Stark (cstark@nsf.gov)
  Huixia Wang   (huiwang@nsf.gov)

- **Anticipated number of awards:** 15-20 (up to $1.2 M, 3 years)

- **Submission Deadline:** May 12, 2021 **(NSF 21-561)**

- Contact: modl@nsf.gov. Visit the homepage for webinar presentation slides

- Reviewer survey (please respond to help with the panel review)

SCALE MoDL (cont.)

- Goals:
  - Support smaller collaborative teams to build the theoretical foundations and advance the understanding of deep learning
  - Workforce training, foreseeing relevance to application domains and industry

- A broad array of possible topics (incomplete list)
  - <u>Theory and approaches</u>: geometric, topological, Bayesian, game theory, optimal transport, optimization, approximation, information theory, dynamical systems, partial differential equations, mean field theory, etc.
  - <u>Use-inspired viewpoints</u>: small data sets, adversarial learning, closing the decision-action loop, etc.
  - <u>Many others</u>: privacy, fairness, evaluation, causal inference, etc.

- PI teams must collectively possess appropriate expertise in:
  - computer science, electrical engineering, and mathematics/statistics.

- Required supplementary document
  - Project Management Plan (PMP <=2 pages): duties and expected contributions, the expertise in the appropriate disciplines, and logistics of working together

CAREER Program

- **Website:**

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503214

- **Submission Deadline:** July 26, 2021 by 5PM submitter's local time

From the solicitation (emphasis added):

The Faculty Early Career Development (CAREER) Program is a **Foundation-wide** activity that offers the National Science Foundation's **most prestigious awards** in support of early-career faculty who have the **potential to serve as academic role models in research and education** and to lead advances in the mission of their department or organization.

What should be in a CAREER proposal?

- Compelling research plan
  - Highly competitive, should match expectations in disciplinary programs
  - Appropriate scope for 5 years
  - Strike a balance between do-able research activities and more risky / ambitious pursuits
  - Keep reviewers in mind, often a broader panel than for standard research grants
- Innovative but do-able education plan (more on next slide)
- Plan for effective integration of research and education
- Letter from the department Chair:
  - Support for the PI's proposed research & education activities
  - Description of how the PI's goals and responsibilities mesh with the institution and department
  - Commitment to professional development of the PI (mentoring, whatever is needed to support the PI's efforts to integrate research & education)
  - Verification that the PI is eligible for the CAREER program.

CAREER Education Plan

- Can include:
  - Curriculum & pedagogy,
  - Outreach (K-12 students & teachers, or the general public),
  - Mentoring at any level (majors and non-majors),
  - Teacher preparation & professional development.
- Go beyond what is expected from any Assistant Professor in your field.
- Workload should not be unreasonable.
- Based on sound rationale: Informed by what has been successful in the past.
- Plan for assessing the success.

Virtual Office Hours: Questions from registration

1. **General questions:**

   A. Can faculty from departments with no graduate program apply for DMS funding? Are they considered for funding?

2. **Infrastructure program:**

   A. Does computer hardware count as infrastructure? How about videoconferencing equipment?

3. **SCALE MoDL program:**

   A. Will this competition be repeated?

   B. How will these proposals be reviewed? When are awards expected?

4. **CAREER program:**

   A. My promotion to Associate Professor has been approved, but it doesn't take effect until September 1. Can I still apply for a CAREER grant?

   B. I am in my first year as an Assistant Professor and have never had NSF funding. Should I apply for a standard grant or a CAREER grant? Can I apply for both in the same year?

   C. My CAREER proposal was declined last year, and I plan to resubmit. How should I address the reviewers' comments when I rewrite my proposal?

   D. Can my proposal budget include support for a collaborator? For a postdoc? For grad students?

   E. How are CAREER proposals in mathematics and statistics reviewed?

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

- 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=2020

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