

Division of Mathematical Sciences (DMS)

Virtual Office Hour

Date: October 13, 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.

Moderators (VOH team): Jennifer Connell, J. Matthew Douglass,
Constanze Liaw, LaWanda Myers, **Swatee Naik**, Adriana Salerno,
Chris Stark, David Waldner

Be sure to stay for the Q&A session at the end of the meeting!



Division of Mathematical Sciences (DMS)

Questions and Answers

- Submit your questions via the Q&A box
 - Q&A session is held at the end of the office hour.
 - Questions can be submitted anonymously.
 - We will focus on questions that may be of interest to a wide audience.
 - For specific questions about a particular program or solicitation, first- be sure to read the webpage or the solicitation, then if needed- 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: November 18, 2021, 3:30 pm EST
 - Topics include: MPS-ASCEND, LEAPS-MPS, DMS-Infrastructure, Statistics.
 - Questions can be submitted in advance on the registration form.



Division of Mathematical Sciences (DMS)

Today's Agenda

- DMS Overview and Updates from the Deputy Division Director - **Junping Wang**
- Computational Mathematics - **Yuliya Gorb**, Leland Jameson, Stacey Levine
- Smart Health (SCH) - **Chris Stark**, Yulia Gel, Andy Pollington
- Life Sciences: MODULUS, EEID, CRCNS, NITMB - **Zhilan Feng**
- Tips for Reviewers - **Marian Bocea**
- Q&A

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) Overview

Opportunities and upcoming deadlines:

- DMS funding opportunities

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

- Upcoming deadlines

https://www.nsf.gov/funding/pgm_list.jsp?ord=date&org=NSF&sel_org=DMS&status=1

- Geometric Analysis and Topology programs, November 02 (target date)
- Applied Mathematics, November 01-15 (window)
- Smart Health and Biomedical Research in the Era of Artificial Intelligence and Advanced Data Science (SCH), November 10
- Secure and Trustworthy Cyberspace (SaTC), November 17

- Updated PAPPG for proposals submitted or due, on/after October 4 https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf22001



Division of Mathematical Sciences (DMS)

Updates – October 13, 2021

By DDD Junping Wang

- DCL NSF 21-124: Critical Aspects of Sustainability (CAS): Innovative Solutions to Climate Change
<https://www.nsf.gov/pubs/2021/nsf21124/nsf21124.jsp?org=NSF>
- Open Program Director Positions at DMS



COMPUTATIONAL MATHEMATICS (CM) PROGRAM

CM program overview:

- **Website:** <https://beta.nsf.gov/funding/opportunities/computational-mathematics>
- **Program Directors (PDs):**
 - Yuliya Gorb: ygorb@nsf.gov
 - Leland Jameson: ljameson@nsf.gov
 - Stacey Levine: slevine@nsf.gov
- **Submission Deadline: December 1, 2021 (apply to PD 16-1271)**
 - Submission Window: November 16 – December 1, 2021
 - Supports mathematical research in areas of science where computation plays a central and essential role, emphasizing analysis, development and implementation of numerical methods and algorithms
 - Follow Proposal and Awards Policies and Procedures Guide (PAPPG):
https://www.nsf.gov/pubs/policydocs/pappg22_1/nsf22_1.pdf

COMPUTATIONAL MATHEMATICS PROGRAM (cont.)

- CM PDs do not review “white papers” (instead, please, please, use public award search engine to determine which projects CM has recently/typically supported)
- If you plan to submit a CONFERENCE proposal, please, follow the new guidelines:
 - US-based conferences: must be submitted at least **6** months in advance of the conference start date;
 - Group travel to meetings outside the US: must be submitted at least **8** months in advance;
 - Conferences, whose budget request exceeds \$50K: must be submitted during the annual CM program’s submission window.
- If you plan to submit a request for supplements, AGEP, INTERN, etc. please contact CM PDs
- We are always happy to chat with our PIs by means of Zoom.

Smart Health and Biomedical Research in the Era of Artificial Intelligence and Advanced Data Science (SCH) Overview

- **Website:**
[https://www.nsf.gov/publications/pub_summ.jsp?WT.z_pims_id=504739
&ods_key=nsf21530](https://www.nsf.gov/publications/pub_summ.jsp?WT.z_pims_id=504739&ods_key=nsf21530)
- **Program Officers:**
Yulia Gel (ygel@nsf.gov), Andy Pollington (adpollin@nsf.gov),
Chris Stark (cstark@nsf.gov)
- **Submission Deadline:** November 10, 2021; November 10, 2022
(NSF 21-530)



Smart Health and Biomedical Research in the Era of Artificial Intelligence and Advanced Data Science (SCH)

- **Goal:** support high-risk, high-reward research in basic science to address pressing questions in the biomedical and public health communities
- ≤ \$1,200,000 total cost, up to 4 years
- **Interdisciplinary teams**
- Contribution to fundamental science from **at least two NSF sciences:** computer and information science, engineering, mathematics/statistics, behavioral and/or cognitive science
- Some research **themes:** Information infrastructure; Transformative data science; Novel multimodal sensor system; Effective usability; Automating health; Medical image interpretation; Unpacking health disparities
- More information---Recorded webinar and presentation slides:
https://nsf.gov/events/event_summ.jsp?cntn_id=301832&org=NSF
- Send a one-page summary about the IM of the project to:

sch-correspondence@nsf.gov



Upcoming Joint Funding Opportunities Between DMS and Other Biology-Focused Programs

- NSF 21-069, Models for Uncovering Rules and Unexpected Phenomena in Biological Systems (**MODULUS**):
 - ✓ No deadlines if submitted to MCB. Submission window: August 20 - September 5 (for FY2022) if submitted to DMS/Math Biology
 - ✓ <https://www.nsf.gov/pubs/2021/nsf21069/nsf21069.jsp>
- NSF 21-609, Ecology and Evolution of Infectious Diseases (**EEID**):
 - ✓ November 17, 2021 (for FY 2021) . Third Wednesday in Nov, Annually Thereafter
 - ✓ <https://beta.nsf.gov/funding/opportunities/ecology-and-evolution-infectious-diseases-eeid>
- NSF 20-609, Collaborative Research in Computational Neuroscience (**CRCNS**):
 - ✓ November 23, 2021 (for FY 2022).
 - ✓ <https://beta.nsf.gov/funding/opportunities/collaborative-research-computational-neuroscience-crcns>
- NSF 21-607, National Institute for Theory and Mathematics in Biology (**NITMB**)
 - ✓ December 01, 2021 (Preliminary proposal). July 18, 2022 (Target date for full proposal)
 - ✓ <https://beta.nsf.gov/funding/opportunities/nsf-simons-collaboration-national-institute-theory-and-mathematics-biology>



Models for Uncovering Rules and Unexpected Phenomena in Biological Systems

(MODULUS: NSF 21-069)

- Dear Colleague Letter: The Division of Mathematical Sciences (DMS), in collaboration with the Division of Molecular and Cellular Biosciences (MCB), seeks to promote interdisciplinary research that enables novel mathematical and computational approaches that capture and explore the full range of mechanisms and biological variability needed to better understand complex and nonlinear behavior across multiple biological systems and scales.
- Competitive proposals are expected to
 - address clearly stated biological questions or hypotheses;
 - make a case for and develop innovative mathematical methods or integrate disparate mathematical fields;
 - articulate a well-defined plan for the mathematics to drive biological discovery within the funded period;
 - include a strategy that uses mathematical models as a central tool to guide further experimental exploration and new discovery on rules of life;
 - describe the unique interdisciplinary training opportunity for graduate students and postdoctoral researchers working on the project.
- NSF 21-069, No deadlines if submitted to MCB. Submission window: August 20 - September 5 (for FY22) if submitted to DMS/Math Biology



Ecology and Evolution of Infectious Diseases

(EEID: NSF 21-609)

- Research on the ecological, evolutionary, and socio-ecological principles and processes that regulate the transmission dynamics of infectious diseases
- A joint solicitation by
 - NSF - Biological Sciences; Social, Behavioral & Economic Sciences; Geosciences; Mathematical & Physical Sciences (**DMS**)
 - NIH - Fogarty International Center; General Med. Sci.; Allergy & Infectious Disease
 - USDA – National Institute of Food & Agriculture
 - UK Research Council
 - United States-Israel Binational Science Foundation
 - National Natural Science Foundation of China
- NSF 21-607, Deadline: Fourth Wednesday in November



NSF-NIH-DOE-BMBF-ANR-BSF-NICT-AEI-ISCI_{III} Joint Program

Collaborative Research in Computational Neuroscience

<http://nsf.gov/crcns> (CRCNS: NSF 20-609)

- Computational neuroscience, inclusively defined
 - encompassing many approaches and goals; related to biological processes; disease and normal function; theory, modeling, and analysis; implications for biological and engineered systems
- ***Innovative, collaborative, and interdisciplinary***
 - to make significant advances on important hard problems, and to develop new research capabilities

The program considers **Research Proposals** describing collaborative projects that bring together complementary expertise on interdisciplinary challenges; and **Data Sharing Proposals** to support preparation and deployment of data and other resources, in a manner that responds to the needs of a broad community.

US domestic and international collaborations are welcome. Opportunities for ***parallel international funding*** (Germany, France, Israel, Japan, Spain, and multilateral). **NEXT DEADLINE Nov 23, 2021**



National Institute for Theory and Mathematics in Biology

(NITMB: NSF 21-607)

- NITMB supports a research institute to enable innovative research at the intersection of mathematical and biological sciences to facilitate new developments of biology-inspired mathematical theories, methodologies, and innovative modeling approaches to advance the understanding of challenging biological problems.
- **Some motivating examples include but not limited to:**
 - ✓ Genome Sciences
 - ✓ Infectious Pathogens: Immunology and Transmission
 - ✓ Neuroscience
 - ✓ Evolution of Shape and Form
 - ✓ Biological Systems on a Changing Planet
- **Following considerations should inform the proposed activities.**
 - ✓ National Resource of Excellence
 - ✓ Talent and Workforce Development
 - ✓ Knowledge Dissemination, Diversity, Equity and Inclusion
 - ✓ Evaluation and Reporting
- Solicitation link: <https://www.nsf.gov/pubs/2021/nsf21607/nsf21607.htm>
- A recorded Webinar is at: https://www.nsf.gov/events/event_summ.jsp?cntn_id=303386&org=NSF
 - ✓ **NSF Working Group Contact:** NITMB@nsf.gov
 - ✓ **Simons Foundation:** Elizabeth Roy; eroy@simonsfoundation.org

Due dates

- Preliminary Proposal:
December 01, 2021
- Full Proposal Target Date:
July 18, 2022



Tips for Reviewers

By Marian Bocea

DOs:

- Base your assessment primarily on what is proposed to be done as part of the project.
- Address both the project's potential to advance knowledge (intellectual merit) and its potential to benefit society (broader impacts).
- Phrase negatives as constructive criticism (e.g., "The proposal would be improved by including more detail on ...").
- Wherever possible, aim criticism at the proposal, not the PI (e.g., say "I do not see [important other work] cited in the proposal," instead of "The PI is not aware of [important other work]").
- Point out any aspects of the proposal that are unclear and may contribute to misunderstandings. Include concrete examples from the proposal in support of the points in your review.
- Put yourself "in the shoes" of the PI and consider the feedback you would like to receive.
- Provide suggestions for improvement of the proposed activities, where appropriate.
- Look for signs of cognitive biases (including the "halo effect" for PIs with famous names or from well-regarded institutions). If you are reviewing multiple proposals, are your reviews consistent and objective?



Tips for Reviewers, contd.

DON'Ts:

- Do NOT write a detailed summary of the proposed work. Remember: We are already aware of what is proposed; what we seek from your review is an evaluation of the proposed project.
- Do NOT base your evaluation exclusively on prior accomplishments/activities of the PI. (A review is not very helpful if it basically just says "The PI has done great work in the past. Send more money.")
- Do NOT use "I am not an expert" or "I am not qualified" or similar phrases. (You are an expert in the general area of the proposal, which is why you are being asked to provide a review.)
- Do NOT include funding recommendations (e.g., "The proposal should be funded.") in your reviews.

Some takeaways:

- A review is an informed and reasoned assessment of the proposed research in the context of the two NSF merit review criteria ("Intellectual Merit" and "Broader Impacts") as well as solicitation-specific review criteria, if applicable. We expect the reviews to speak explicitly and in substantive ways to both the strengths and the weaknesses of a proposal, and not be reduced to a few brief sentences.
- Your overall rating of a proposal [Excellent (E), Very Good (V), Good (G), Fair (F), or Poor (P)] should be consistent with the content of your review for that proposal. When reviewing multiple proposals (e.g., as a panelist), your reviews and ratings should be consistent and objective.



Tips for Reviewers, resources

More Information about the NSF Broader Impacts Criterion:

- See <https://www.nsf.gov/od/oya/special/broaderimpacts/> and links therein.
- The NSF Proposal & Award Policies & Procedures Guide (PAPPG):
https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg

NSF Video Resources for Reviewers:

- Tips for Reviewers (19 minutes): <https://tipsforreviewers.nsf.gov/>
(The website will ask you for an email address, but as far as we know it is not crucial; any email address will suffice.)

- NSF Broader Impacts Review Criterion (3 minutes):
<https://www.nsf.gov/od/oya/special/broaderimpacts/broader-impacts-video.jsp>



Virtual Office Hour: Questions from registration

1. General topic:
 - A. May I submit a one-page summary of the proposal to determine suitability of a submission to a specific program?
 - B. If I already have a grant from NSF, is it possible to apply for another from the same or a different program?
 - C. How can I volunteer to serve as a reviewer for a particular program in DMS?
2. Computational Mathematics:
 - A. Does this program fund proposals for computing equipment? Is there a program that does make such grants?
 - B. Where should I send a proposal on computational simulations in biology? Computational chemistry?
3. Smart Health (SCH) program:
 - A. This is an NSF-wide program – how are proposals based in math/stats reviewed?
 - B. The solicitation calls for interdisciplinary teams – how big do those teams need to be?
 - C. Whom can we contact at NSF to discuss eligibility and budget options?
4. NITMB:
 - A. How much information does a preliminary proposal require?
5. Tips for reviewers:
 - A. Is it true that a proposal with any rating of less than Excellent is unlikely to be funded?



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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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