NSF Funding Opportunities in the Mathematical Sciences

Topology Students Workshop
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www.nsf.gov

NSF
Division of Mathematical Sciences

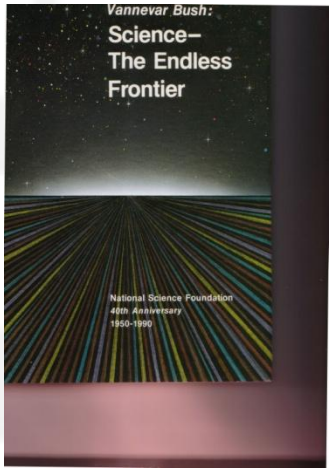
I. Overview

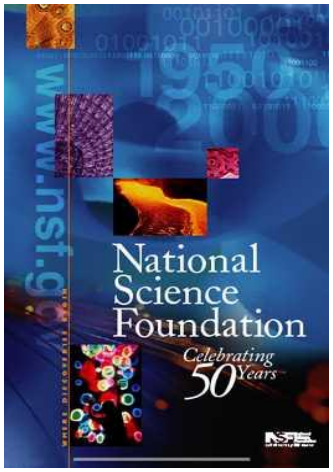
II. A Look Inside DMS

I. Overview

- The National Science Foundation is a federal government agency with a budget request for 2013 of $7.4 billion
- We support research and education in science and engineering
- Have been in existence since 1950

NSF Vision





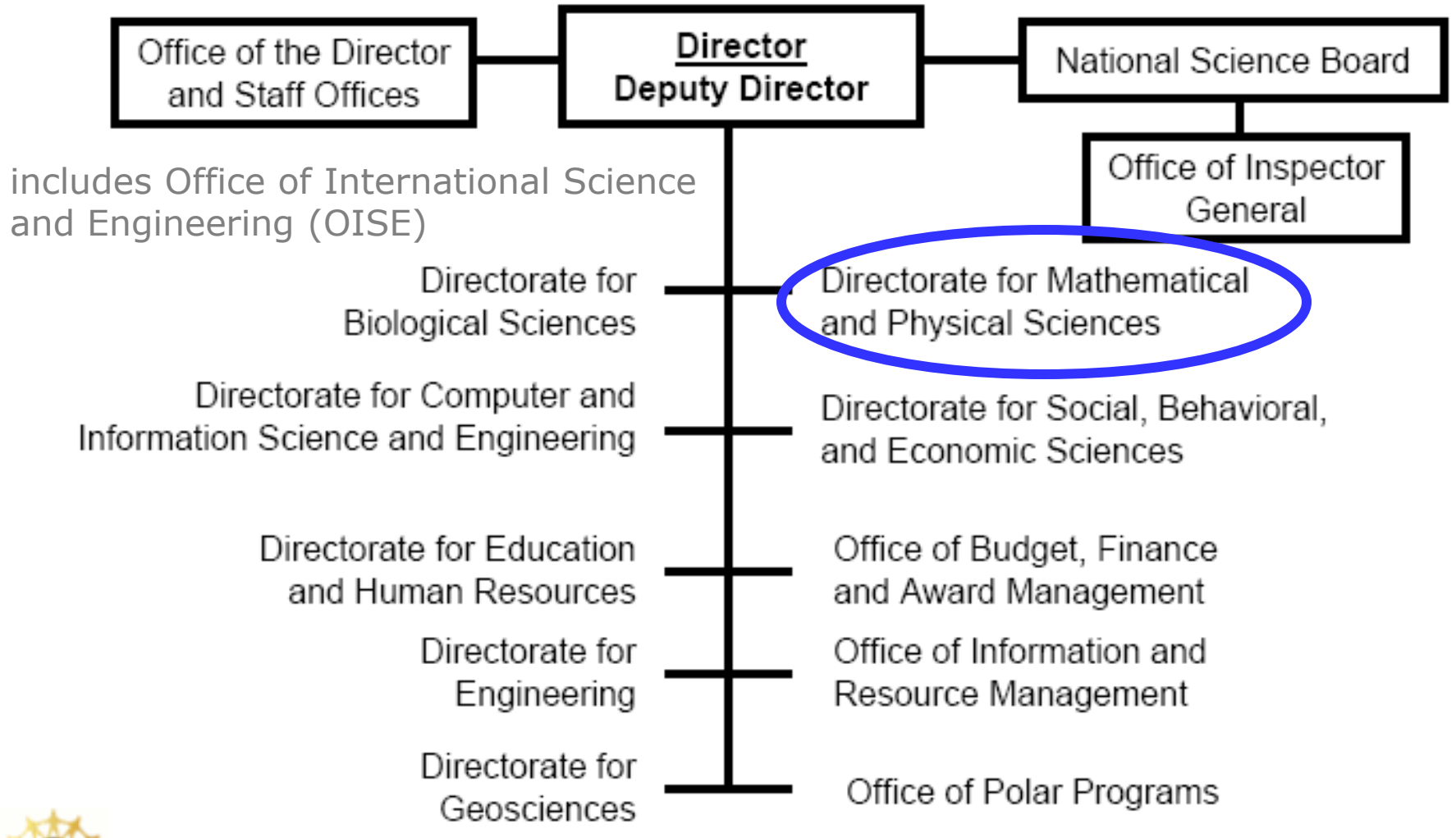
NSF envisions a nation that

- *capitalizes on new concepts in science and engineering and*
- *provides global leadership in advancing research and education.*

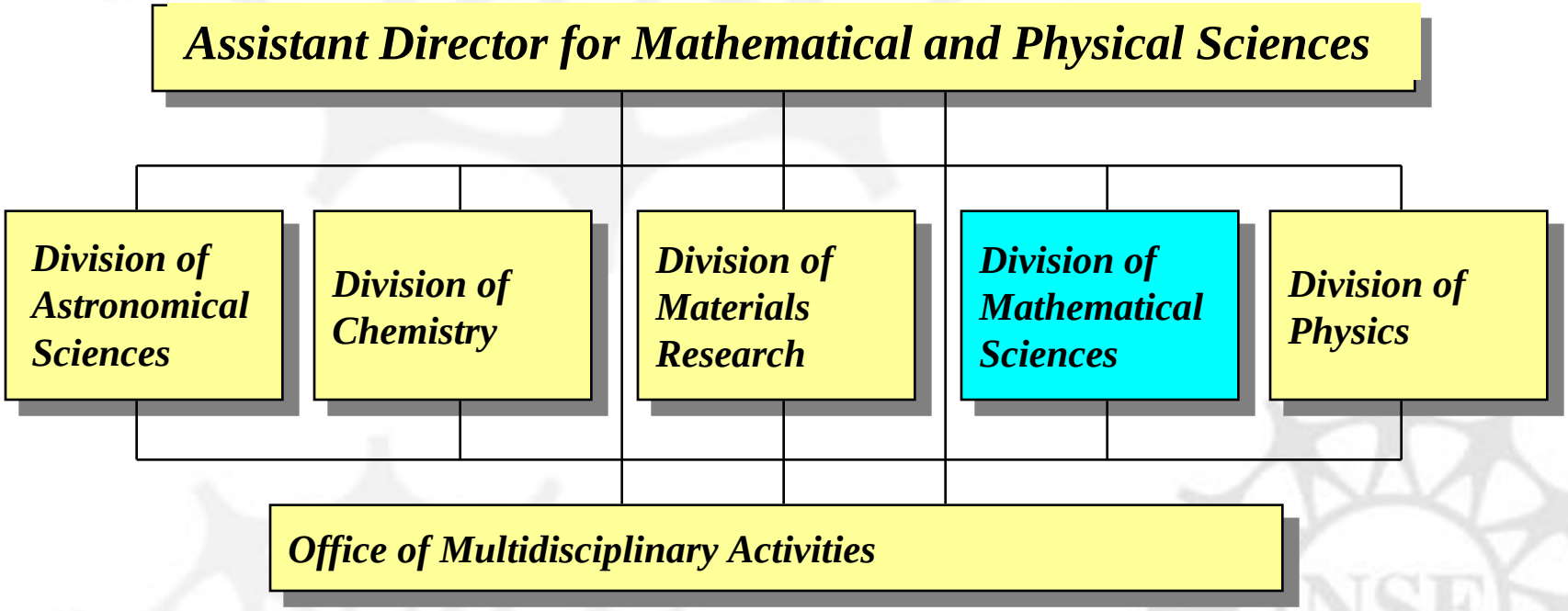
NSF Mission (original)

- Promote the progress of science;
- Advance the national health, prosperity, and welfare;
- Secure the national defense.

National Science Foundation Organizational Chart



Directorate for Mathematical and Physical Sciences



Eagle's Eye View: Division of Mathematical Sciences invests in…

- **Discovery**
  - *Broad, deep, and sustained support for discovery at the frontiers of research in the mathematical sciences*
- **Connections**
  - *Pursue research opportunities at the boundaries of the mathematical sciences that drive discovery in science, strengthen economic competitiveness, and enhance national security*
- **Community**
  - *Cultivate a community of researchers, students, and professionals of sufficient breadth, depth, and diversity to sustain the Nation's mathematical sciences enterprise in the 21st century*

Major Areas of Investment

- Core programs
- Interdisciplinary activities
- Institutes
- Infrastructure
- Workforce

Core Programs

- Algebra and Number Theory
- Analysis
- Applied Mathematics
- Computational Mathematics
- Mathematical Biology
- Probability, Combinatorics, and Foundations
- Topology and Geometric Analysis
- Statistics

Topology & Geometric Analysis

Regular research grants typically support

- Salary – usually for summer
- Travel support
- Other research needs

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Opportunities for Junior Researchers

- REU program (sites and supplements)
- GRFP (graduate research fellowships)
- NSF Mathematical Sciences Institutes
  - http://www.mathinstitutes.org
- Conferences and Special Meetings
- Workshops arising from CAREER awards
- MSPRF (postdoctoral fellowships)
- CAREER

II. A Look Inside

- Finding Funding Opportunities
- Proposal Preparation Tips
- How to **Not** Get Funded
- Making the Reviewers' Job Easy
- NSF Merit Review Criteria
- How the Review Process Really Works

Finding Funding Opportunities

- **DMS web page**
  - *www.nsf.gov/mps/dms*
- **DMSNEWS mailing list**
  - Send an e-mail message to:
    listserv@listserv.nsf.gov
    containing the following phrase
    subscribe dmsnews Your Name

Proposal Preparation Tips

- Decide if your proposal fits the program
- Be compliant, read the Grant Proposal Guide
- Keep the audience in mind (experts and non-)
- Give clearly defined goals.
- Describe a *project* that has a desired outcome.
- Outline clearly the novelty of the project.
- Explain added values.
- Make it readable (not too technical, proofread).
- Seek advice from more senior colleagues.

How to Not get funded

- *I've done great things; send money*
- *Here are great questions.* End.
- Not describing importance of your work to the broader field.
- Not highlighting novel ideas, approaches.
- Not citing relevant literature.
- No indication of potential difficulties and how to approach them.
- Ignoring Broader Impacts

Make the Reviewers' Job Easy

- Make sure your proposal is well-written
  - Be concise, specific, and complete
  - Write simply, but professionally
  - Avoid jargon
  - Use spell and grammar checkers
- Read (and follow!) all the directions
- Clearly label every section and subsection -- Use sections, headings, bullets
- Use correct font size (although 10 point is allowed, 11 or 12 point is much easier to read)
- Use appendices only when specifically permitted; refer to these in the text and provide specifics
- Make sure references are accurate and complete

NSF Review Criteria

NSF has two primary review criteria

- Intellectual Merit
- Broader Impacts

Make sure to use the phrases "Intellectual Merit" and "Broader Impacts" in your project summary.

NSF Review Criterion:

Intellectual Merit

Panel review is likely to involve non-specialists:

- Why is this work important?
- How will the work advance the field generally?
- Provide an introduction for the well-educated non-specialist.

Review is also likely to involve specialists:

- Put proposed work into context of other work on the topic.
- What is new in the proposed approach?
- Tell how you plan to attack the proposed problems.

NSF Review Criterion:

Broader Impacts

Point out in your proposal:

- Education through research involvement. (Justify any request for student support.)
- Any special dissemination efforts.
- Inclusion of under-represented groups.
- Any potential benefits to society.
- Development of resources for use by the community.

How Review Works

- TGA Program Officers (PO) run about 7 panels. Additional shared panels with other programs.
- Panel review
  - 2-3 days
  - 8-16 panelists
  - 25-60 proposals
- PO recommendation
  - Budget constraints
  - Portfolio balance

Thank you!

Questions ?

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