



**NATIONAL  
SCIENCE  
FOUNDATION**

**Directorate for  
Mathematical  
and  
Physical  
Sciences**

# Directorate for Mathematical and Physical Sciences (MPS)

## MPS Merit Review and Oversight Mechanisms

*Proposal Review:* MPS maximizes the quality of the proposals it supports through the use of a competitive, merit-based review process. In FY 2006, 80% of research funds were allocated to externally reviewed projects.

*Committee of Visitors (COV):* MPS convenes Committees of Visitors, composed of qualified external evaluators, to review each program every three years. These experts assess the integrity and efficiency of the processes for proposal review and provide a retrospective assessment of the quality of results of the National Science Foundation's investments. COV reports and Directorate responses are at <http://www.nsf.gov/od/oa/activities/cov/covs.jsp>.

*MPS Advisory Committee (MPSAC):* MPS also receives advice from the Mathematical and Physical Sciences Advisory Committee on such issues as: the mission, programs, and goals that can best serve the scientific community; promoting quality graduate and undergraduate education in the mathematical and physical sciences; and priority investment areas in MPS-supported research. Minutes are at <http://www.nsf.gov/mps/advisory.jsp>.

*Other Advisory Committees:* MPS also participates in three advisory committees that advise multiple agencies: the High Energy Physics Advisory Panel (with the U.S. Department of Energy (DOE)); the Nuclear Science Advisory Committee (with DOE); and the Astronomy and Astrophysics Advisory Committee (with DOE and the National Aeronautics and Space Administration (NASA)). Standing committees and studies of the National Research Council provide another mechanism for obtaining advice.

## MPSAC Membership as of October 2006

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|--|---|
| L. Bildsten, University of California, Santa Barbara | L. Dalton, Washington   |
| S. Coppersmith, Wisconsin                            | R. Hughes, Bryn Mawr  |
| S. Gruner, Cornell                                   | J. Onuchic, University of California, San Diego               |
| R. Kohn, New York University                         | M. de la Cruz, Northwestern                                   |
| S. Koonin, British Petroleum                         | M. Witherell (CHAIR), University of California, Santa Barbara |
| E. Ostriker, Maryland                                | I. Johnstone, Stanford  |
| D. Oxtoby, Pomona                                    | W. Jorgensen, Yale  |
| M. Rieke, Arizona                                    | D. Keyes, Columbia  |
| E. Simmons, Michigan State University                | T. Maldonado, Texas A&M                                       |
| Dr. Arnold, Minnesota                                | D. McDuff, Stony Brook  |
| C. Burrows, Utah                                     | I. Robertson, University of Illinois at Urbana - Champaign    |
| C. Canizares, Massachusetts Institute of Technology  | W. Soboyejo, Princeton  |
|  | R. Williams, Space Telescope Science Institute                |

# Mathematical and Physical Sciences **MPS**

Dear Reader:

This brochure has been created with the intent of informing you about the Mathematical and Physical Sciences Directorate of the National Science Foundation (NSF). We hope the material we've collected here gives you an idea of how the research we conduct serves as the foundation for advances in computers, public health, national security and economic growth.

MPS research spans the full range of spatial and time scales accessible to human investigation—distance scales ranging from the size of atoms to the structure of galaxies and of the universe itself, and timescales ranging from reactions lasting millionths of a billionth of a second to the evolution and age of the universe. We develop new mathematical structures and investigate the fundamental particles and processes of matter. We bring what we've learned in physical sciences to exploring complex biological systems, human and social dynamics, sustainable energy, and the environment. Past research in MPS has led to the Magnetic Resonance Imaging (MRI) machines you find in hospitals, the biological and chemical detectors you see in airports, and the development of alternate fuel technologies.

Research in the mathematical and physical sciences serves as the basis for much technological innovation. In the next few years, our research will support the nation's investment in innovation through the American Competitiveness Initiative and the America COMPETES Act, help improve computing power past the physical and conceptual limits of Moore's Law, and shed light on the very nature of matter, space, time and the physical laws that govern the evolution of the universe.

We hope this brochure will give you a flavor of the research we support at universities and laboratories throughout our country, and we invite you to learn more about us on our web site at <http://www.nsf.gov/dir/index.jsp?org=MPS>.



With Regards,

A handwritten signature in black ink, appearing to read 'Tony Chan'.

Tony Chan  
Assistant Director  
Directorate for Mathematical and  
Physical Sciences