Mathematics Opportunities

Deadlines and Target Dates at the DMS

The Division of Mathematical Sciences (DMS) of the National Science Foundation (NSF) has a number of programs in support of mathematical sciences research and education. Listed below are the programs and their deadlines or target dates for the year 2001.

First week of January 2001 (target date): Mathematical Biology part of Applied Mathematics (includes all RUI proposals)

January 18, 2001 (deadline): Scientific Computing Research Environments for the Mathematical Sciences (SCREMS)

February 1, 2001 (target date): Research Planning Grants and Career Advancement Awards for Minority Scientists and Engineers

April 18, 2001 (target date): CBMS Regional Research Conferences in the Mathematical Sciences

June 16, 2001 (letter of intent deadline): Grants for Vertical Integration of Research and Education in the Mathematical Sciences (VIGRE)

July 17, 2001 (proposal deadline): Grants for Vertical Integration of Research and Education in the Mathematical Sciences (VIGRE)

July 22, 2001 (deadline): Faculty Early Career Development (CAREER) Program

September 15, 2001 (deadline): Research Experiences for Undergraduates Sites (send inquiries to: reu.dms@nsf.gov)

September 18, 2001 (letter of intent deadline): Focused Research Groups in the Mathematical Sciences

October 2, 2001 (target date): Algebra and Number Theory

October 2, 2001 (target date): Analysis

October 2, 2001 (target date): Foundations

October 16, 2001 (deadline): Mathematical Sciences Postdoctoral Research Fellowships (send inquiries to: msprf@nsf.gov)

October 18, 2001 (proposal deadline): Focused Research Groups in the Mathematical Sciences

First week of November 2001 (target date): Applied Mathematics (excluding Mathematical Biology)

First week of November 2001 (target date): Statistics and Probability

First week of November 2001 (target date): Geometric Analysis

First week of November 2001 (target date): Topology

November 13, 2001 (deadline): University-Industry Cooperative Research Programs in the Mathematical Sciences

December 5, 2001 (target date): Computational Mathematics

December 14, 2001 (deadline): Interdisciplinary Grants in the Mathematical Sciences

Proposals for conferences, workshops, and special years that are submitted to the Statistics and Probability program or to the Topology and Foundations program can be sent at any time. However, proposals for these activities that are submitted to all other DMS programs (Analysis, Algebra and Number Theory, Applied Mathematics, Computational Mathematics, and Geometric Analysis) must be submitted according to the target dates for those programs. Proposals for supplements for Research Experiences for Undergraduates may be submitted at any time.

For further information consult the DMS Web site at http://www.nsf.gov/mps/dms/. The mailing address is Division of Mathematical Sciences, National Science Foundation, Room 1025, 4201 Wilson Boulevard, Arlington, VA 22230. The telephone number is 703-306-1870.

—From a DMS announcement

AMS-AAAS Mass Media Fellowships

The American Association for the Advancement of Science sponsors the Mass Media Science and Engineering Fellows Program, through which graduate students work during the summer in major media outlets. The AMS provides support each year for one or two graduate students in the mathematical sciences to participate in the program. In past years the AMS-sponsored fellows have held positions at such

media outlets as *Business Week*, National Geographic Television, *Time* magazine, *Popular Science*, and the *Dallas Morning News*.

Fellows receive a weekly stipend plus travel expenses to work for ten weeks during the summer as reporters, researchers, and production assistants in media organizations. They observe and participate in the process by which events and ideas become news, improve their ability to communicate about complex technical subjects in a manner understandable to the public, and increase their understanding of editorial decision making and the manner in which information is effectively disseminated. Each fellow attends an orientation and evaluation session in Washington, DC, and begins the internship in mid-June. A wrap-up session is held at the end of the summer.

Mathematical sciences faculty are urged to make their graduate students aware of this program. The deadline to apply for fellowships for the summer of 2001 is **January 15, 2001.** The fellowship application is available online at `http://ehr.aaas.org/ehr/` (click the "Projects" link). For more information contact AAAS Mass Media Science and Engineering Fellows Program, 1200 New York Avenue, NW, Washington, DC 20005; telephone 202-326-6760; fax 202-371-9849; or the AMS Washington Office, 1527 Eighteenth Street, NW, Washington, DC 20036; telephone 202-588-1100; fax 202-588-1853; e-mail: `amsdc@ams.org`.

—Elaine Kehoe

EDGE Summer Program

Funded by the National Science Foundation, the National Security Agency, and the Andrew W. Mellon Foundation, the Enhancing Diversity in Graduate Education (EDGE) Program, a postbaccalaureate summer enrichment program, is designed to strengthen the ability of women and minority students to successfully complete graduate programs in the mathematical sciences.

The summer program consists of two core courses in analysis and algebra/linear algebra. There will also be minicourses in vital areas of mathematical research in pure and applied mathematics, short-term visitors from academia and industry, guest lectures, graduate student mentors, and problem sessions. In addition, a follow-up mentoring program and support network will be established with the participants' respective graduate programs.

Applicants to the program should be women who are (i) graduating seniors who have applied to graduate programs in the mathematical sciences, (ii) recent recipients of undergraduate degrees who are now entering graduate programs, or (iii) first-year graduate students. All applicants should have completed standard junior-senior–level undergraduate courses in analysis and abstract algebra and have a desire to earn the doctorate degree. Women from minority groups who fit one of the above three categories are especially encouraged to apply. Final acceptance to the program is contingent upon acceptance to a graduate program in the mathematical sciences.

In 2001 the program will be held at Spelman College in Atlanta, GA. The dates for the summer program are June 4–29, 2001. It will be codirected by Sylvia Bozeman (Spelman College) and Rhonda Hughes (Bryn Mawr College). A stipend of $1,800 plus room and board will be awarded to participants. Names of applicants chosen to participate in the program will be announced by April 15, 2001.

Applications should consist of the following: (1) a completed application form; (2) a statement describing the expected value of this program to the applicant's academic goals; (3) two letters of recommendation from mathematical sciences faculty familiar with the applicant's work; (4) a transcript and current résumé; (5) a list of graduate programs to which the applicant has applied, together with a ranked list of her two or three top choices.

The application deadline is **March 1, 2001**. Applications should be sent to: EDGE Program, Department of Mathematics, Spelman College, Atlanta, GA 30314.

For more information or to obtain applications, visit the program's Web site at `http://www.brynmawr.edu/Acads/Math/edge/edge.html`.

—EDGE Program announcement

News from the IMA

The 2000–01 program of the Institute for Mathematics and its Applications (IMA) is "Mathematics in Multimedia". The topic for the winter program is Digital Libraries, and for the spring, Geometric Design and Computer Graphics. The dates, topics, and brief descriptions of the workshops follow.

January 10–13, 2001: Analysis and Modeling of Industrial Jetting Processes. This Hot Topics workshop will address mathematical challenges in this field, the applications of which include ink-jet printing, optical device manufacturing, and DNA arrays.

January 17–19, 2001: Fractals in Multimedia. This minisymposium will focus on fractal mathematics as applied to video algorithms, lossless compression, resolution enhancement, image compression, recognition, segmentation, and space-filling curves.

January 25–26, 2001: Tutorial on Digital Libraries.

January 29–February 2, 2001: Digital Libraries—Data Modeling and Representation. This workshop will survey relevant models and algorithms for multimedia storage, retrieval, transmission, and rendering.

February 12–16, 2001: Digital Libraries—Digital Asset Management. This workshop will address such topics as digital watermarking, encryption, software agents, indexing, compression, authentication, and distribution of digital assets.

February 26–March 2, 2001: Digital Libraries—Classification, Retrieval, and Visualization. This workshop will address mathematical methods for describing and recognizing media content in a fashion that is consistent with user needs and improving current techniques in that field.

April 9–13, 2001: Ideal Data Representation. This joint IDR-IMA workshop will address applications of topics that include multiresolution and wavelet decompositions, wavelet frames, and other redundant systems, nonlinear methods, and feature detection systems.

April 19–20, 2001: Tutorial on Geometric Design.

April 23–27, 2001: Geometric Design. This workshop will address the design and representation of surfaces, methods for compressing surfaces, use of distributed databases, and applications in manufacturing, among other topics.

May 4–6, 2001: Minorities and Applied Mathematics—Connections to Industry and Government Laboratories. This IMA Career Workshop will present examples of people and problems from industrial and government laboratory settings, provide discussions of expectations of nonacademic and academic employers, and provide tools for participants to help them participate fully in applied areas.

May 10–11, 2001: Tutorial on Computer Graphics.

May 14–18, 2001: Computer Graphics. This workshop will concern mathematical aspects of computer graphics, particularly as related to 3D and the development of new algorithms using techniques from wavelets, finite element analysis, Monte Carlo methods, and algebraic geometry.

June 14–15, 2001: Haptics, Virtual Reality, and Human-Computer Interaction. This workshop addresses a central issue in human-computer interface, which is the development of devices that allow users to explore, represent, and interact with virtual objects.

Details of these and all planned IMA programs may be found at `http://www.ima.umn.edu/programs/annual/annual.html`, or contact the Institute for Mathematics and its Applications, University of Minnesota, 400 Lind Hall, 207 Church Street, Minneapolis, MN 55455; telephone 612-624-6066; e-mail to Fred Dulles, Associate Program Director, at `dulles@ima.umn.edu`.

—From an IMA announcement

News from IPAM

The Institute for Pure and Applied Mathematics (IPAM), inaugurated August 2000, is a new NSF-funded mathematical sciences research institute located at the University of California at Los Angeles. Its vision is to strengthen the ties between mathematics and other scientific fields. Generally there are two semester-long programs per year, plus several shorter programs scattered throughout the year. There will also be a summer student industrial research program. IPAM has funding to support both senior and junior mathematicians, including graduate students, participating in IPAM programs.

The program during the fall of 2000 is "Functional Genomics". Proposals are solicited for long programs starting fall 2003, for short programs starting fall 2001, and for programs in later years. Please visit our Web site at `http://www.ipam.ucla.edu/` for further information.

What follows are descriptions of upcoming IPAM activities.

January 3–12, 2001: Financial Mathematics: Risk Management, Modeling and Numerical Methods. Organizing Committee: Jaksa Cvitanic (USC), Mark Broadie (Columbia). This workshop will present recent advances in the field, including mathematical modeling, model estimation, calibration, and numerical implementation for quantitative and computational risk management.

March 19–23, 2001: Oscillatory Integrals and Dispersive Equations. Organizing Committee: Michael Christ (UC Berkeley), Sergiu Klainerman (Princeton), Terence Tao (UCLA). This workshop is intended to disseminate recent progress and envision future directions in the closely related fields of oscillatory integrals and nonlinear dispersive and wave equations.

March 27–June 15, 2001: Geometrically Based Motions. Organizing Committee: Jean-Michel Morel (ENS-Cachan), Stanley Osher (UCLA), Panagiotis Souganidis (University of Texas, Austin). This program will present new numerical and analytic techniques for computing geometric objects and capturing moving interfaces, as well as the real-world applications (ranging from materials science to image processing) that can now be investigated using these new methods.

Summer 2001: Research in Industrial Projects for Students. Organizing Committee: Robert Borrelli and Mike Raugh (Harvey Mudd College), Tony Chan (UCLA). This program will be modeled after the Mathematical Clinic at Harvey Mudd College, which is well known for its undergraduate research projects with industry. Students will be assigned real-life projects with industrial mentors that will encourage students to develop problem solving and other mathematical skills.

September 10–December 14, 2001: Conformal Field Theory. Organizing Committee: Eric D'Hoker (UCLA), David Gieseker (UCLA), T. Miwa (Japan), David Olive (UK), D. H. Phong (Columbia), Jean-Bernard Zuber (France), Phillippe Di Francesco (France). Mathematics has recently seen extensive interaction with physics, especially with the ideas of quantum field theory, string theory, conformal field theory, and Seiberg-Witten theory. Physicists have discovered many truly amazing mathematical relationships. While there is a thriving collaboration between string theorists and mathematicians, there has been somewhat less activity between conformal field theorists and mathematicians. The purpose of this program is to encourage this interaction.

March 10–June 15, 2002: Communication Networks. Organizing Committee (incomplete): Walter Willinger (AT&T). The Internet has become a gold mine for new, exciting, and challenging mathematical problems, where scale, complexity, and dynamics play key roles. The goal of this program on the interface between the mathematical/physical sciences and computer/engineering sciences is to initiate, facilitate, or foster interactions among researchers with diverse backgrounds who seek to unravel the ill-understood dynamics of large-scale complex networks such as the Internet.

—IPAM announcement