
Mathematics Opportunities

American Mathematical Society Centennial Fellowships

Invitation for Applications for Awards for 1998-99

Deadline: December 1, 1997

The AMS Centennial Research Fellowship Program makes awards annually to outstanding mathematicians to help further their careers in research. Recently the AMS Council approved changes in the rules for the fellowships. From 1984-96, the fellowship program was aimed at midcareer mathematicians. The changes adopted two years ago redirected the fellowship program toward recent Ph.D.s. The eligibility rules are as follows.

Applicants must: (1) be citizens or permanent residents of a country in North America, (2) have held their doctoral degrees for at least two years at the time of the award, (3) not have permanent tenure, and (4) have held less than two years of research support at the time of the award. (Each year of a full-time teaching appointment with teaching load less than four (respectively, five) courses per year on the semester (respectively, quarter) system will count in this respect as one-half year of research support.) Recipients may not hold the Centennial Fellowship concurrently with other research fellowships (e.g., Sloan Foundation Fellowships or National Science Foundation Postdoctoral Fellowships), they may not use the stipend solely to reduce teaching at the home institution, and they are expected to spend some of the fellowship period at another institution

that has a stimulating research environment suited to the candidate's research development.

The stipend for fellowships awarded for 1998-99 is expected to be approximately \$36,000, with an additional expense allowance of about \$1,500. Acceptance of the fellowship cannot be postponed. Fellowship holders may use the stipend as full support for a year or may combine it with half-time teaching and use it as half support over a two-year period.

The number of fellowships to be awarded is small and depends on the amount of money contributed to the program. The Trustees have arranged a matching program from general funds in such a way that funds for at least one fellowship are guaranteed. Because of the generosity of the AMS membership, it has been possible to award two to five fellowships a year for the past ten years.

Applications should include a short research plan describing both an outline of the research to be pursued and a program for using the fellowship, including institutions at which it will be used and reasons for the choices. The selection committee will base its decision on both the research potential of the applicant, based upon track record and letters of recommendation, and on the quality and feasibility of the research plan.

The deadline for receipt of applications is **December 1, 1997**. Awards will be announced in February 1998 or earlier if possible.

For application forms write to the Executive Director, American Mathematical Society, P.O. Box 6248, Providence, RI 02940-6248, or send electronic mail to ams@ams.org, or call 401-455-4103. Application forms are also available via the Internet at URL <http://www.ams.org/committee/profession/>. **Please note that completed**

application and reference forms should not be sent to the AMS, but to the address given on the forms.

—AMS Announcement

News from the Institute for Mathematics and its Applications

University of Minnesota

The 1997–98 program at the IMA is **Emerging Applications of Dynamical Systems**. The winter 1998 term will be devoted to the topic, **Dynamics in Physiology and Chemistry**.

The first workshop will be a ten-day event on the overall topic of **Computational Neuroscience** (January 14–23, 1998). Of interest here are the roles of the highly nonlinear intrinsic properties of individual neurons and of coupling properties between cells that determine the dynamical activity of neuronal networks. Unique mathematical features of the cell-based neuronal models that underlie complex spatio-temporal patterns are the multiple and vast time scales of ionic currents and the circuit properties which include local as well as long-range coupling, possibly with random connectivity. The workshop will consist of a few intense two- to three-day periods, bringing together experimentalists and theoreticians to focus on specific systems, such as those on modelling vision and navigation.

The workshop February 9–13 will be on **Calcium Dynamics in Cells**. Dynamic changes in cellular free-calcium concentrations are essential for a great variety of cellular processes, including muscle contraction and cell motility. A number of complex signalling pathways which couple mechanisms such as voltage-gated ion channels, calcium exchangers, pumps and calcium release mechanisms have been uncovered in the laboratory, and realistic models of these processes are being developed. A special focus will be the new mathematical challenges that this area presents in dynamical systems theory. The workshop will be preceded by a two-day tutorial (February 5–6) that provides the necessary biological background for nonexperts and an overview of current models.

The last workshop of the winter term will address **Cardiac Rhythms** (March 9–14). Simplified models of heart electrical activity show normal wave propagation, as well as arrhythmias such as spontaneous spiral wave generation. Complicating factors for modelers include differing nonlinear properties in different regions, anisotropy in the conduction pathways, and branching in the Purkinje system which triggers the muscle electrical activity. Large scale 3-D computational models as well as reduced models based on singular-perturbation descriptions and kinematics of spiral cores have led to insights into cardiac physiology. The heart also focuses attention on mathematically interesting issues for the more general area of excitable media.

The spring term will be devoted to **Symmetry and Pattern Formation**. More detailed descriptions of the spring 1998 program will appear in a future issue of the *Notices*. See the October 1997 issue for information about the fall 1997 program on **Numerical Analysis of Dynamical Systems**.

For more information about IMA activities and how to register, contact the IMA at staff@ima.umn.edu or through the World-Wide Web <http://www.ima.umn.edu/>.

—IMA Announcement

NRC Program for Collaborative Research

The Office for Central Europe and Eurasia of the National Research Council (NRC) offers grants to individual American specialists who plan to establish new research partnerships with their colleagues from Central/Eastern Europe (CEE) and the Newly Independent States (NIS) of the former Soviet Union. This program is designed primarily to prepare these new partnerships for competition in National Science Foundation (NSF) programs. Funding is provided by the NSF.

Applications from American specialists who possess or will possess Ph.D. degrees or equivalent research *and* experience at least six months prior to the requested beginning dates of their programs will be considered. U.S. citizens and permanent residents are eligible. Foreign specialists must possess CEE or NIS citizenship and must hold Ph.D. (kandidat) degrees or equivalent research training and experience at least six months prior to the requested beginning dates of their programs. U.S. Government employees generally are not supported under the program.

As the program is designed to support new collaborative efforts, no more than two grants will be awarded per applicant in a four-year period. Applicants who have received their doctoral degrees within the past six years will receive special consideration, as will applicants wishing to work with colleagues in less frequently represented countries and regions. Scientists and engineers who hold a current NSF grant and are eligible for an NSF international supplement should not apply to this program. The NSF's Eastern Europe Program staff (telephone 703-306-1703) can advise regarding applications for NSF international supplements.

Short-Term Project Development Grants support American specialists who wish to host or visit their CEE or NIS colleagues for two-week periods in order to prepare collaborative research proposals for submission to the NSF.

Long-Term Grants support American specialists who wish to host or visit their CEE or NIS colleagues for collaboration on research for a period of one to six months. Significant publications jointly authored by program participants as a result of their long-term visits are expected.

Short-Term Project Development grants range from \$2,200 to \$2,500, and Long-Term Grants range from \$3,000 to \$15,300.

The following deadlines apply: **December 29, 1997** (Project Development only); **April 6, 1998** (Project Development only); **July 10, 1998** (Long-Term only); **August 17, 1998** (Project Development only).

To obtain information and application materials, please contact: Office for Central Europe and Eurasia, National Research Council, 2101 Constitution Avenue, NW, Washington, DC 20418; telephone 202-334-3680; fax 202-334-2614; e-mail oce@nas.edu. Information is also available at the Web site <http://www2.nas.edu/oia/22da.html>.

— *NRC Announcement*

NRC Associateship Programs

The National Research Council (NRC) conducts the Research Associateship Programs in cooperation with, and on behalf of, selected federal research agencies and organizations under contract. These programs have two objectives: (1) to provide doctoral scientists and engineers of unusual promise and ability opportunities for research on problems, largely of their own choice, that are compatible with the research interests of the sponsoring laboratories; and (2) to contribute to the overall research efforts of these laboratories and to the national scientific and technological welfare of the United States.

Each year, approximately 13,000 inquiries are received, about a thousand completed applications are received and processed, about 700 candidates are recommended for awards, and 400 new and renewal awards are offered. In a given year nearly 600 Research Associates hold tenure of these awards at more than 100 geographic locations throughout the United States, a few in U.S. Government laboratories overseas.

Postdoctoral Research Associateship awards are offered to scientists and engineers who have held an earned research doctorate for less than five years at the time of application and carry stipends ranging from \$27,750 to \$45,500, depending on the program and the field of research. Senior Research Associateship awards are offered to established scientists and engineers who have held a research doctorate five years or longer at the time of application and carry stipends that are individually determined, ranging from \$35,000 to \$83,000, exclusive of any sabbatical leave pay.

Applications submitted to the NRC are accepted on a continuous basis throughout the year. Those postmarked no later than **January 15** will be reviewed in February, by **April 15** in June, and by **August 15** in October.

Information on specific research opportunities and participating federal laboratories as well as application materials may be obtained from: Associateship Programs—TJ 2114, National Research Council, 2101 Constitution Avenue, NW, Washington, DC 20418; telephone 202-334-2760; fax 202-334-2759; e-mail: rap@nas.edu. Information may also be found on the World Wide Web at <http://rap.nas.edu/>.

— *from NRC Announcement*