
For Your Information

Call for Submissions for ICM VideoMath Festival

The next International Congress of Mathematicians (ICM) will take place in Berlin, Germany, from August 18 to 27, 1998. The Congress will be accompanied by a number of cultural events, including the VideoMath Festival, a public presentation of a collection of outstanding mathematical videos.

The festival is intended to attract a broad audience: ICM attendees, students, teachers, and the proverbial “man-in-the-street” who has an interest in mathematics. The collection of videos to be presented will be selected by a program committee. The video pieces chosen will be integrated into a feature film of up to two hours in length.

Entries for the VideoMath Festival are encouraged from all areas of mathematical visualization. Submissions should appeal to a general but educated public and should also meet the highest standards with respect to mathematical content, visualization techniques, artistic design, and technical quality. A submission may include notes to the program committee about the mathematical content of the work, new techniques that have been used, or a brief statement describing the artistic concept of the work.

For further information, write to: ICM98—VideoMath Festival, c/o Ms. Saida Grase, Konrad-Zuse-Zentrum (ZIB), Takustr. 7, D-14195 Berlin, Germany; e-mail to video-math@zib.de. Information is also available on the Web site <http://www-sfb288.math.tu-berlin.de/VideoMath/>. Submissions must be received by **April 3, 1998**.

—*from ICM98 Announcement*

Free Computer Modern Fonts Available

The PostScript Type 1 implementation of the Computer Modern fonts produced and previously distributed by Blue

Sky Research and Y&Y, Inc., are now freely available for general use. This has been accomplished through the cooperation of a consortium of scientific publishers, including the AMS, with Blue Sky Research and Y&Y. Other members of the consortium include Springer-Verlag, Elsevier Science, the Society for Industrial and Applied Mathematics, and IBM. This font set contains a variety of roman, italic, and sans-serif text faces as well as an extensive collection of mathematical and scientific symbols.

The fonts can be downloaded from the AMS \TeX Resources page on e-MATH, <http://www.ams.org/tex/>. They are also available on the AMS FTP server, e-math.ams.org, at [/pub/tex/cmfonts/ps/](ftp://pub/tex/cmfonts/ps/). Each font distribution includes a READ.ME file which contains instructions for installing the fonts. Users are advised to read the READ.ME file in its entirety before installing the fonts on their systems.

—*from AMS Electronic Products Development Announcement*

NSF Reports on Undergraduate Education

In the past year the National Science Foundation (NSF) has issued two reports about undergraduate education in science, mathematics, and engineering.

“Shaping the Future: New Expectations for Undergraduate Education in Science, Mathematics, Engineering, and Technology” was produced by a subcommittee of the Advisory Committee to the Directorate for Education and Human Resources of the NSF. The subcommittee was chaired by Melvin D. George, retired president of St. Olaf College. The report is based on comments invited from some two hundred leaders in the scientific and industrial community, as well as ideas gathered in events held during 1995–96 by the National Research Council.

The report describes a vision for undergraduate education in science, mathematics, engineering and technology in which all students receive supportive, high-quality

instruction that gives them a chance to engage in scientific inquiry. While acknowledging that there have been significant improvements, partly because of NSF support, the report finds that on the whole undergraduate education in these areas falls far short of this vision.

One of the main problems identified in the report is lack of attention to undergraduate teaching. The report discusses at some length "Talking about Leaving", a three-year ethnographic study of natural science and engineering majors. The students were highly critical of the instruction they received, saying that faculty were more interested in research than in teaching. "The distancing of faculty from students was sometimes increased by sarcasm, degradation, or ridicule," the report says of the study's findings.

The report examines the current state of undergraduate education in science, mathematics, engineering, and technology and concludes that, given changes in the world economy, education in these areas must play a larger role in the preparation of the future work force. A number of barriers to improving undergraduate education are cited in the report. Among these are the wide variety in student preparation, curricular and pedagogical problems, a rewards system that favors research over education, lack of resources, and organizational issues such as the structure of departments.

The NSF's programs in undergraduate education have stimulated improvement, the report says, but most of the changes depend on the initiative of individual faculty members, and systemic national changes have been "only tentative." The report concludes with a list of recommendations to the government, business and industry, the media, faculty, departments, professional societies, and others. The most detailed and specific recommendations are for the NSF itself. For example, the report says that the NSF needs "virtually a doubling of resources" for undergraduate education.

The other report presents an evaluation of the NSF's Course and Curriculum Development (CCD) program, which has been a major source of funding for reform of the calculus course. Because it examines only this one NSF program, this report has a much narrower focus and purpose than "Shaping the Future". The evaluation was conducted by The Network, Inc., a consulting firm that is a subcontractor to SRI International. Forming the basis for the evaluation were site visits, a survey questionnaire, and telephone interviews.

Overall the report finds that the CCD program is working very well and has had an important impact on undergraduate instruction. "[T]his program is achieving its ultimate goal of increasing students' understanding of, and attitudes toward [mathematics, science, and engineering]," the report states. The program was successful in reaching participating students and faculty, but the impact on departments was more limited, it says. Nevertheless, "[t]he program's accomplishments...are particularly impressive since many projects encountered institutional cultures that attached relatively low priority to undergraduate education, especially the education of non-science majors."

The report identifies a number of features that contributed to the success of the projects, such as a high level

of coherence in course material, emphasis placed on broad concepts rather than small details, deepening student understanding by revisiting concepts in diverse contexts and examples, and faculty mastery of the pedagogy used. The findings about the features of successful programs should be widely disseminated, the report suggests, as they are likely to be of great use to future proposers and reviewers. Among the report's recommendations are training for faculty and teaching assistants in the use of new curricular materials and assessment instruments, more workshops to disseminate information about successful projects, and greater attention to the needs of underrepresented groups.

The two reports are available at the Web site of the NSF's Division of Undergraduate Education, <http://www.ehr.nsf.gov/EHR/DUE/start.htm>. Or contact: Division of Undergraduate Education, National Science Foundation, 4201 Wilson Blvd., Room 835, Arlington, VA 22230; telephone 703-306-1666; fax 703-306-0445; e-mail: undergrad@nsf.gov.

—Allyn Jackson

Toyota Awards Grants to Teachers

Twenty mathematics teachers were honored as the first recipients of Toyota's Investment in Mathematics (TIME) grants at the meeting of the National Council of Teachers of Mathematics (NCTM) in April. The TIME grants, up to \$10,000 each, aim to improve mathematics education by giving kindergarten through 12th-grade teachers the support they need to develop and implement innovative mathematics projects.

TIME, provided by a partnership between Toyota Motor Sales and NCTM, is one of the largest national grant programs ever offered to mathematics teachers. TIME is funded by Toyota and administered by its Mathematics Education Trust foundation. In 1996 Toyota contributed \$16.6 million to U.S. nonprofit organizations, with more than 50 percent of those funds supporting education programs.

A panel of mathematics education experts chose the 1997 recipients from close to 1,100 applicants. The grants will be distributed over a two-year period. Toyota will also sponsor a summer seminar, administered by NCTM, for grant winners and experienced mentors from the mathematics community.

—from Toyota TIME news release