AMS MEMBER
WINTER 2006
NEWSLETTER
AMS American Mathematical Society

A PUBLICATION TO INFORM MEMBERS ABOUT SOCIETY ACTIVITIES. THIS ISSUE HIGHLIGHTS AMS PROGRAMS FOR MATHEMATICALLY TALENTED HIGH SCHOOL STUDENTS.

Mathematically talented high school students are the future of the profession. This issue of the newsletter focuses on some of the AMS programs that support math camps, awards, and classroom teachers—programs that inspire interest, reward talent, and promote appreciation of mathematics.

Epsilon Awards

Photos courtesy of Hampshire College

The AMS's Epsilon Fund was created in 1999 to help support summer math programs for young math scholars. Each year the Society awards grants of up to US$15,000 on a competitive basis to selected summer programs for student scholarships and other expenses. While these AMS grants cover only a small portion of the total costs, they can make a large difference in attracting additional funding.

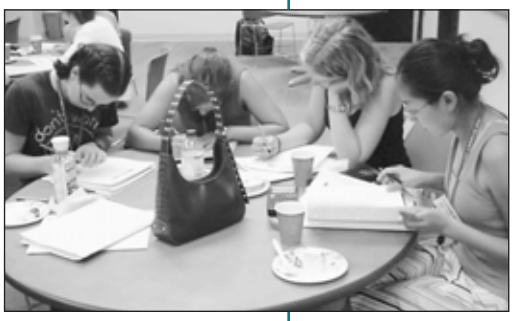


Photo courtesy of All Girls/ All Math Summer Camp

In 2005, nine programs received grants from the Epsilon Fund totaling US$80,000: **All Girls/All Math Summer Camp**, University of Nebraska, Lincoln; **Canada/USA Mathcamp**, Reed College, Portland, OR; **Hampshire College Summer Studies in Mathematics**, Hampshire College, Amherst, MA; **Math Path**, Colorado College, Colorado Springs; **Michigan Math and Science Scholars Program**, University of Michigan, Ann Arbor; **PROMYS**, Boston University, Boston, MA; **Ross Mathematics Program**, Ohio State University, Columbus; **Texas State Honors Summer Math Camp**, Texas State University, San Marcos; and **University of Chicago Young Scholars Program**, University of Chicago, Chicago, IL. There have been 47 awards over the past six summers, totaling $475,000.

From a student at an Epsilon-funded 2005 summer math camp:

"The style of learning at camp was completely different. We were given a toolbox full of a variety of tools, and with those tools we built things. We built theorems. We built conjectures. We built ideas. But most importantly, we built our own skills. We learned to work in groups. We built self-confidence."

The 2005 Epsilon Memorial Scholarship awardees, their schools, and the summer program they participated in are:

- **Peter Diao**, Thomas Jefferson High School, Alexandria, VA, Ross Mathematics Program;
- **Athena Jiang**, Technology High School, Lincroft, NJ, PROMYS;
- **Florence Kanu**, KIPP Houston High School, Houston, TX, Texas State University Honors Summer Math Camp;
- **Eric Larson**, Theodore Roosevelt Middle School, Eugene, OR, CANADA/USA Mathcamp;
- **Steven Yu**, Brooklyn Technical High School, Brooklyn, NY, Hampshire College Summer Studies In Mathematics; and
- **Karl Zipple**, Cardinal Gibbons High School, Raleigh, NC, Ross Mathematics Program.

Diao received a ***Roderick P.C. Caldwell Scholarship***; the other five students each received a ***Ky and Yu-Fen Fan Scholarship***. For students who receive an Epsilon Memorial Scholarship, the money often makes the difference between attending or not—a difference that may affect the rest of their lives.

Read more Find out how to apply for Young Scholars Support at **www.ams.org/employment/epsilon.html**; to learn more about and contribute to the Epsilon Fund go to **www.ams.org/development/epsilon.html.**

INSIDE THIS ISSUE

Kenneth Ribet and students

Elwyn Berlekamp and students

Arnold Ross Lecture Series

Arnold Ross started his summer program for gifted high school students in 1957, and ran it every summer until 2000, giving the number theory lecture each morning. In keeping with this prestigious tradition, each year the AMS presents the Arnold Ross Lectures for talented high school mathematics students.

Recent lecturers: **Kenneth Ribet** (University of California, Berkeley), *Fermat's Last Theorem and Beyond*; **Elwyn Berlekamp** (University of California at Berkeley), *The Dots and Boxes Game: Sophisticated Child's Play*; and **Paul Sally, Jr.** (University of Chicago), *Problems in Mathematics from Zero to Infinity*.

"Professor Ribet's talk was fascinating, and I had a great time…"

Current Arnold Ross Committee members are **Brian D. Conrad** (University of Michigan); **Susan F. Parker** (Brandeis University); **Victoria A. Powers** (Emory University); **Glenn H. Stevens**, chair (Boston University); and **Ravi D. Vakil** (Stanford University).

Read more Information about the lecture series is at **www.ams.org/meetings/ross-lect.html**; an obituary of Arnold Ross (1906–2002) is at **www.ams.org/ams/ross.html**.

Who Wants to Be a Mathematician Games

In the AMS game *Who Wants to Be a Mathematician*, previously qualified high school students compete for cash and prizes by answering progressively difficult multiple choice mathematics questions. All contestants in the game win prizes. The contestant with the most points at the end of the game gets the chance to answer the bonus question worth US$1500. The cash prize in each game is donated by the AMS. Other prize donors are Maplesoft Inc., Texas Instruments, and John Wiley & Sons.

The games are very exciting and the enthusiasm of the audience often matches that of a crowd at a sporting event. Recent games have taken place in Colorado, Texas, New York, and Puerto Rico.

At these games, four students earned the cash grand (actually 1.5 grand) prize. The game takes place every year at the Joint Mathematics Meetings and as part of the Arnold Ross Lectures.

Who Wants to Be a Mathematician also takes place each spring in Rhode Island either on Pi Day or in April to celebrate Mathematics Awareness Month. One contestant, **Marcus Alexander**, who received Honorable Mention in the 2005 U.S. Math Olympiad, qualified and participated in the games as an eighth grader (the youngest contestant to date) and continued through his senior year.

Who Wants to Be a Mathematician is a program of the AMS Public Awareness Office and was developed by **Mike Breen** (AMS Public Awareness Officer), who is the game emcee, and **Bill Butterworth** (DePaul University), who is the judge.

"My peers and I enjoyed the experience very much…Thank you, once again, for an incredibly informative (Fermat's Last Theorem!) and enjoyable day!!!!"

Read more Read about past games and view a video at **www.ams.org/wwtbam**.

Mathematical Moments

The ***Mathematical Moments*** program has received praise for its success in promoting appreciation and understanding of the role mathematics plays in science, nature, technology, and human culture. The "snapshots" (full-color 8.5 x 11" posters) provide a handy, eye-catching, and concise way to show the many applications of mathematics—in archaeology, data compression, CAT-scans, architecture, and automated

translation of languages, for example. The Moments (now 48) are posted on the AMS website as pdf files that are freely available to download and print. Each topic is available in two versions: One version that includes an introduction and a paragraph describing the mathematics applied, and a short version that includes a larger graphic and the introductory paragraph. Each fall the newest eight flyers are printed and then mailed to math departments, taken to meetings, and sent upon request to teachers, conference organizers, and parents to use as teaching resources and to promote awareness of mathematics to students. In 2006 some Moments will be translated into various languages, to be posted on the website, and brought to the International Congress of Mathematicians.

"I would like to congratulate you on an excellent resource. I have just finished downloading several of the *Mathematical Moments* which I know my class of 11- and 12-year-old students is going to enjoy. Many of the topics fit with research we are currently conducting in the classroom, and others will, I know, spark interest in investigating other concepts."

Submit ideas for *Mathematical Moments* to paoffice@ams.org.

Read more View and print ***Mathematical Moments*** at **www.ams.org/mathmoments**.

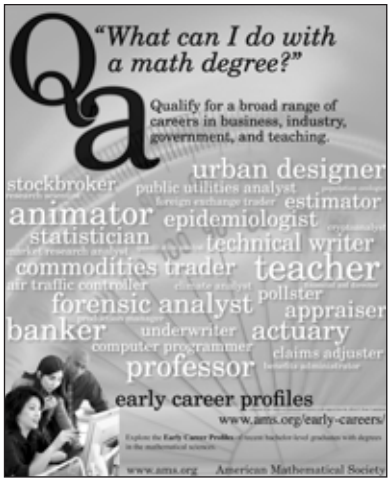
Karl Menger Memorial Awards

2005 Karl Menger Memorial Award winners

Family members of the late **Karl Menger** were the major contributors to a memorial fund established at Duke University. The majority of the income from this fund is used by the AMS for annual awards at the International Science and Engineering Fair (ISEF) held each May. This year was the 18th year of AMS participation in the ISEF, and it marked the 16th year of the presentation of the Karl Menger Memorial Awards.

The members of the 2005–2006 AMS Menger Prize Committee and AMS Special Award Judges are **Elwyn Berlekamp** (University of California, Berkeley), **Gisele Goldstein** (University of Memphis), **Dmitry Fuchs** (University of California, Davis), and **Tatiana Shubin** (San Jose State University). The panel of judges reviewed more than one hundred individual and team projects in the fields of mathematics, physics, and computer science. A member of the panel interviewed each entrant under consideration for a Menger Prize, and the entire panel interviewed the finalists. The AMS gave awards to one first-place, two second-place, and four third-place projects, and honorable mention to five others. At the 2005 ISEF the first-place award of US$1000 went to **Scott Duke Kominers** (Walt Whitman High School, Bethesda, MD), for "On Universality Properties of Positive-Definite Integral Quadratic Forms."

Read more See all the Menger award winners back to 1990 at **www.ams.org/prizes/menger-award.html**; to contribute to the Menger Fund contact **development@ams.org**; or telephone 401-455-4111.



Resources on Mathematical Careers

"What can I do with a math degree?" That question is one that math teachers hear often from high school and undergraduate students. In response, the AMS has created several resources for students interested in math, and for teachers to inspire students:

- **"What can I do with a math degree?" poster**. Download the small version at www.ams.org/employment/what-mathdegree.pdf or order the printed poster from paoffice@ams.org.

- **The Early Career Profile Network.** The AMS recruits and supports a network of mathematical sciences departments that systematically provide job profiles of their recent bachelor's-level alumni. The Early Career Profile Network is supported in part by the Alfred P. Sloan Foundation under the auspices of the Sloan Career Cornerstone Series. See the first entries on the site at http://www.ams.org/early-careers/.

Read more The AMS web portal ***Attention High School Students and Teachers*** at **www.ams.org/employment/highschool.html** includes a list of summer math camps and programs, and links to mathematics help, local math clubs and events, online magazines for high school math students, information on math-related careers, posters, tools, math competitions and contests.

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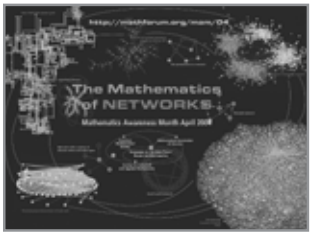
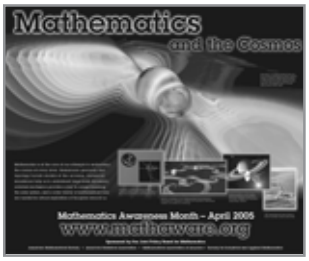
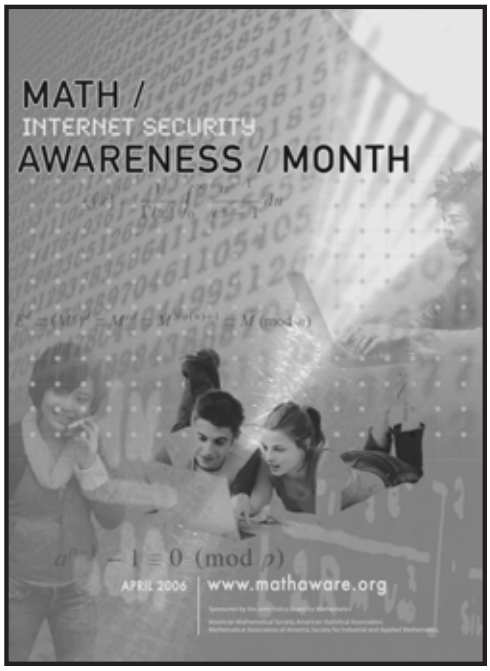




Posters from previous years



2006 Mathematics Awareness Month poster

April is Mathematics Awareness Month

Mathematics Awareness Month is sponsored each year by the Joint Policy Board for Mathematics: the AMS, American Statistical Association (ASA), the Mathematical Association of America (MAA), and the Society for Industrial and Applied Mathematics (SIAM). Each year one of the societies creates materials and an accompanying poster that highlight mathematical developments and applications in a particular area.

The theme for April 2006 is **Mathematics and Internet Security**. Committee chair Keith Devlin worked with the MAA to produce the resources.

Read more The 2006 Mathematics Awareness Month announcement, theme essay, poster, and related resources are at **www.mathaware.org**.