Inside the AMS

"Current Events" Session at Joint Meetings

At the Joint Mathematics Meetings in Atlanta in January 2005, AMS president David Eisenbud is organizing a special session on "Current Events". The session will feature five expository lectures on topics at the frontier of mathematical research.

The format for the talks follows the model of the famous Bourbaki Seminars in that mathematicians with especially strong expository skills speak on work not their own and written versions of the talks are prepared beforehand and distributed at the session. But there are some novel features too. The area of coverage is broader than that of Bourbaki and includes talks on applied areas, and the talks are generally more accessible than those of Bourbaki. Many begin with a general, nontechnical presentation of the topic, lasting about twenty minutes. There is a short break, and then the talk continues with a more detailed presentation of how the topic is used in a particular setting. These "Current Events" sessions have drawn large audiences and have turned out to be one of the most popular activities at the Joint Meetings.

The written versions of the talks are collected in an attractive booklet distributed at the session. A tradition has also developed for the talks to appear in print. Two of them have been expanded to appear as articles in the *Bulletin of the AMS* ("Recent advances in the Langlands Program", by Edward Frenkel, and "The wave maps equation", by Daniel Tataru, both in volume 41, number 2, 2004). Four papers based on talks in the 2004 "Current Events" sessions will appear in the January 2005 issue of the *Bulletin*.

For the session in Atlanta, the speakers and their lecture titles are:

Bryna Kra, Northwestern University, "The Green-Tao Theorem on Primes in Arithmetic Progression: A Dynamical Point of View"

László Lovász, Microsoft, "Graph Minors and the Proof of Wagner's Conjecture"

Jerrold E. Marsden, California Institute of Technology, and Shane David Ross, University of Southern California, "New Methods in Celestial Mechanics and Mission Design"

Dusa McDuff, State University of New York at Stony Brook, "Floer Theory and Low Dimensional Topology"

Robert McEliece, California Institute of Technology, "Achieving the Shannon Limit: A Progress Report"

The session will take place on Friday, January 7, 2005, starting at 1:00 p.m. For further details consult the Joint Meetings program in this issue of the *Notices* or on the Web at `http://www.ams.org/amsmtgs/2091_intro.html`.

—Allyn Jackson

AMS Congressional Lunch Briefing

In September 2004, Fred S. Roberts, professor of mathematics and director of the Center for Discrete Mathematics and Theoretical Computer Science (DIMACS) at Rutgers University, presented an AMS-sponsored briefing to members of Congress and staff, highlighting contributions of the mathematical sciences to emergency preparedness, disaster prevention, and related security matters.

Emergency preparedness, disaster prevention, and security require detailed planning of preventive measures and responses, and these require precise reasoning and extensive analysis. Experimentation or field trials are often prohibitively expensive or unethical and do not always lead to fundamental understanding. Therefore, mathematical modeling becomes an important experimental and analytical tool.

Mathematical models have become important tools in the planning for prevention and response, especially when combined with powerful, modern computer methods for analyzing and/or simulating the models. Roberts's talk showcased several situations where mathematical modeling plays a crucial role: for example, in sensor location for detecting biological contaminants, identifying new "events" from large databases of text, identification of authors, and getting early warning of new disease threats.

Previous AMS Congressional Lunch Briefings have focused on such topics as: Mathematics and Biology (July 2003, speaker Joel E. Cohen); Mathematics, Patterns and Homeland Security (February 2002, speaker Ingrid

Daubechies), and Mathematics Education (July 2001, speakers Deborah Loewenberg Ball, Hyman Bass, and Roger Howe). For further information on these briefings and other activities of the AMS Washington office, see the webpage http://www.ams.org/government.

—*AMS Washington office*

My Summer at *Scientific American*

Each year the AMS sponsors a fellow to participate in the Mass Media Fellowship program of the American Association for the Advancement of Science. This program places science and mathematics graduate students in summer internships at media outlets. In the piece below, the 2004 AMS fellow, Lisa DeKeukelaere of Brown University, describes her experiences during her fellowship at Scientific American *magazine. For information about applying for the fellowship, see the October 2004 issue of the* Notices, *page 1075, or visit the website* http://ehrweb.aaas.org/massmedia.htm. *The application deadline is* **January 15, 2005**.

It's amazing how excited you can get about seeing a small green blob in print. One of my first assignments at *Scientific American* was to develop a preliminary design for a graphic explaining Brownian motion. I needed to describe how it was discovered, why it is important, and how it relates to Einstein (whom the article was about) in a two-sentence caption and to show how a pollen molecule (my green blob) moves in relation to collisions with atoms. In the end, my original caption was completely rewritten by my editor, and my pictorial sketch was overhauled by a graphic designer, but I learned several things aside from the basics of Brownian motion while working on that project. The more heavily your work is edited, the more you learn for next time, and magazine writing is about deciding exactly which facts are important and conveying them in a concise and catchy format. The final product was a green blob that I could call my own.

Last summer I was fortunate enough to spend ten weeks editing, writing, fact-checking, and learning about everything from Einstein's mistresses to the true origin of the yo-yo at *Scientific American*. My editor there exposed me to all aspects of the whirlwind that is magazine publishing: I met with the publisher, the circulation manager, and the director of ancillary products. I sat in on production meetings, news meetings, art meetings, and staff meetings. Some of the most interesting were the triage meetings, where editors gathered to discuss the fate of manuscripts that had been submitted by scientists. Most articles in *Scientific American* are written by the researchers themselves, and editors spend the majority of their time working to develop and fine-tune these pieces.

Given the emphasis on editing, it was appropriate that my first two assignments involved improving and revising content penned by scientists and readers in "Ask the Experts" and "Letters to the Editor". The "Ask the Experts" page contains scientists' responses to questions about such things as the chemistry of stain removal and helium-induced voice transformations. The challenge is to take the responses posted on the website, which can exceed 800 words, and whittle them down to 200 words without losing accuracy or a sense of the author's personality. Editing "Letters to the Editor" presented similar difficulties. Before that experience it had never occurred to me that most normal people do not write clear, grammatically correct ten-sentence letters to magazines or just how many people take the time to write out and mail in their opinions.

The best thing about my summer was having the opportunity to work on a wide variety of projects in a wide range of fields. For one project I read eight different books about Einstein in order to provide readers with a guide for brushing up on the famous physicist's discoveries. In addition to the basics of relativity, the project taught me about the degree to which even science can be viewed from a variety of angles. I read books appropriate for the computer scientist, the beach reader, the Einstein fanatic, and the science phobe. For another Einstein-related project, I used my high school German skills to translate the marginal notes in one of his handwritten manuscripts from 1950 in hopes of finding a Fermat-like gem of wisdom. My search ended in vain, but I did learn that even geniuses have messy handwriting and reword sections of their writing just like the rest of us.

Fact-checking also provided me with more opportunities to diversify my base of knowledge. Several days spent fact-checking a piece on the chemistry of cannabis taught me more than I ever wanted to know about the history of marijuana, as well as just how many websites out there are a bit beyond scientific accuracy. One of my favorite projects of the summer involved verifying the accuracy of a graphic illustrating a basic concept in physics. When an object falls through the air, its acceleration due to gravity is eventually countered by air resistance. After this happens the object falls at a constant speed, known as its terminal velocity, which depends on the shape of the object and the density of the air. A picture drawn to demonstrate this concept depicted a baseball being thrown from an eight-story skyscraper, and the question was whether a baseball could actually reach its terminal velocity after just eight stories. I was initially amazed that readers would even notice such a detail if it were slightly inaccurate, but in the end I was proud to work at a magazine with such devoted subscribers.

While editing and fact-checking were both difficult, writing was by far my most challenging task. Having written a mathematical research paper in the past, I knew how tough it is to clearly and concisely communicate high-level math concepts to someone outside of the discipline. However, research papers rarely have a 500-word limit and a requirement for readability by anyone with a high school education. Writing for a magazine is a delicate exercise in balancing and choosing what is most important and interesting while using carefully crafted analogies and

phrases to accurately convey a message in as few words as possible.

My first piece involved a project that used applied mathematics to reconstruct pottery pieces and served as my introduction to the heartbreaking process of condensing a fascinating topic into a few sound-bite-like sentences. In this particular case, it involved once again swallowing the harsh reality that not everyone finds math as fascinating as I do (otherwise we would all be in graduate school together, I suppose). My editors this summer noted that general science magazines contain little math, because it is difficult to provide the necessary background in a few words and to provide an interesting context for the average reader, so I saw this particular project as an opportunity to showcase math's dazzling possibilities. Articles about math are appealing, because many find it mysterious and therefore derive a sense of satisfaction in discovering its secrets, just as seasoned math researchers delight in uncovering new properties.

When I reflect upon the deeper lessons I learned last summer, I think about the importance of communication in the science community. As a beginning graduate student, it is easy to feel that classes and research are all that matter, but this summer fellowship reminded me of why I entered graduate school in the first place. I wanted to obtain skills that would help me solve real-world problems and eventually teach these skills to others. Good professors know how to give students important information without clouding the details and to use examples that will pique students' interest, tasks that are very similar to writing a good article. As for research, bringing new scientific discoveries to the public is critical in order for them to be utilized and built upon. Regardless of where I end up ten years from now, I feel privileged to have gained the skills that will help me excite others about math and make my mark on the world.

—Lisa DeKeukelaere, Brown University

Deaths of AMS Members

JANUSZ J. CHARATONIK, Universidad Nacional Autonoma de Mexico, Institute of Math., died on July 11, 2004. Born on May 24, 1934, he was a member of the Society for 36 years.

EMMET F. LOW JR., professor emeritus, of Wise, VA, died on February 24, 2003. Born on June 10, 1922, he was a member of the Society for 47 years.

ALBERT SCHILD, professor emeritus, of Philadelphia, PA, died on August 29, 2004. Born on March 3, 1920, he was a member of the Society for 57 years.

DAVID L. YARMUSH, retired, of New York, NY, died on July 28, 2004. Born on June 10, 1928, he was a member of the Society for 49 years.