

# Report of the Executive Director, State of the AMS, 2013

November 2012 marked the beginning of the Society's 125th year. The AMS will observe its milestone anniversary on November 24 this year. I am pleased to report that the AMS remains flexible, robust, financially healthy, and very active in serving the mathematics community, thanks to the efforts of members and a dedicated staff. Several notable events and transitions occurred in 2012.

- Robert Daverman completed fourteen years as secretary of the AMS at the end of January 2013. The job expanded greatly during his tenure. He pursued its demands with boundless energy and dedication, for which the Society owes genuine gratitude.

- The Joint Mathematics Meetings (JMM) in Boston in January 2012 broke records for attendance and for the number of talks and Special Sessions. More than 6,600 participants accounted for an 18 percent increase from the year before!

- The print version of *Mathematical Reviews* published its last issue in December 2012. This was a bittersweet transition whose time had come as the online version, MathSciNet®, continues to be enriched with new features that simply cannot be duplicated in print.

- More than 1,100 Fellows of the AMS were invited in 2012 and formally inducted in January 2013 at the Joint Mathematics Meetings in San Diego.



Photograph by Sandy Huffaker.

Fellows reception, January 2013, San Diego.

## Current Issues

The work of the Society is often driven by exogenous issues affecting the mathematics community. In 2012 education policy was at the forefront. In February the President's Council of Advisors on Science and Technology (PCAST) released the report *Engage to Excel: Producing One Million Additional College Graduates with Degrees in Science, Technology, Engineering, and Mathematics*, which has spurred a great deal of activity from the Society's leadership and from the Committee on Education. Some elements of the PCAST report are controversial, but more

to the point, it has stimulated new attention to important initiatives in undergraduate mathematics teaching and learning.

Online education was transformed in 2012 by the emerging availability of Massive Open Online Courses (MOOCs), through which a single course can reach tens of thousands of students. MOOCs offer new opportunities and new challenges for higher education. They are potentially revolutionary, and their long-term impact is yet to be determined. The AMS is exploring ways that it might facilitate discovery of and access to online educational resources for mathematics.

The Common Core State Standards for Mathematics have been adopted by forty-five states and are currently being implemented. The development and implementation of the standards has been a priority of the Conference Board of the Mathematical Sciences (CBMS) for several years. In 2012 the AMS (in cooperation with the MAA) and CBMS published *The Mathematical Education of Teachers II*. MET II is a professional development resource for PreK–12 teachers of mathematics. The content of the new edition has been aligned with the Common Core Standards.

The public advocacy role of the Society and of individual members became more important in dealing with distractions that gained far more attention than they ever should have received in mass media. The important outcome here is that members of the mathematics community have written eloquent rebuttals in the press to the politicizing of the Common Core State Standards, to an op-ed column questioning the importance of algebra in basic education, and to the claim by a distinguished biologist that mathematics need not be an important component of the education of a scientist. The AMS will continue efforts to facilitate contributions by the community in presenting the “public face” of mathematics.

Open access continues to be a major issue for scholarly publishing. Briefly, the debate about open access publishing is concerned with different approaches to making research articles freely available to everyone. The AMS started discussions in September 2012 about a proposal for establishing two new open access journals. The discussions culminated in April 2013, when the Council approved an experiment to launch *Proceedings of the American Mathematical Society, Series B*, and *Transactions of the American Mathematical Society, Series B*, to begin publication in 2014.<sup>1</sup> A benefit for the entire mathematics community is that the AMS is able to publish more of the expanding research literature at no cost to libraries or readers.

## Highlights of 2012 Activities

The year 2012 was a very busy one for the Society in all of its principal areas of activity. I shall highlight a number of specific accomplishments in publishing, professional programs and services, meetings, and outreach and advocacy for the mathematics community.

<sup>1</sup>Robert M. Harington, “New journals from AMS”, *Notices of the AMS* 60, no. 8, pp. 1064–65.

### Serving the Community

The Society continued to provide its well-known traditional programs as well as offer new ones for members and mathematicians at all levels. The pilot program for AMS Graduate Student Chapters was introduced, which resulted in several applications to establish chapters. The program is now open to all departments and will provide direct support to help groups of students become engaged in mathematical research. The AMS is pleased to offer the chapters, together with the Graduate Student Travel Grants program and very active AMS Graduate Student Blog, to serve the interests and needs of graduate students in the mathematical sciences.

Each year approximately 300 graduate students receive travel support from the AMS to attend meetings. There were 103 Graduate Student Travel Grant recipients at JMM 2013; they were treated to a brunch where they could meet other students and members of the AMS leadership. In 2012, 187 graduate students accepted travel grants to attend AMS sectional meetings. The student travel grants are supported by one generous anonymous donor.



Grad student brunch in San Diego.

Meetings are thriving: 6,189 mathematicians, including many students, took part in JMM 2013 in San Diego and contributed to seventy-nine Special Sessions. In contrast, the attendance at JMM in San Diego in 2008 was 4,600. The Society also held eight Sectional Meetings in 2012 with total attendance of over 3,000.

The Mathematics Research Communities (MRC) program continues to be highly successful. The 2012 MRC summer conferences at the Snowbird Resort in Utah drew 119 early-career mathematicians. These conferences, funded by the National Science Foundation, are part of this AMS program that also includes special sessions at JMMs, ongoing support from conference organizers, and a continuation of the connections and collaborations via electronic forums and occasional face-to-face meetings. Through 2012, a total of 529 participants have taken part in the MRC program.

Overall, I enjoyed it immensely; I feel I became stronger as a mathematician, and I got a chance



MRC workshop.

to meet and work with some amazing people. Thank you!—2012 MRC participant

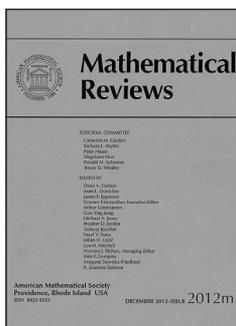
One of the major developments in communications was the increased AMS activity on social media. Followers from around the world can find news, comment on topics, initiate and join discussions, and view and comment on videos on AMS Facebook, Twitter, LinkedIn, and YouTube. I welcome AMS members and others to become part of the community on these social networks.

An important improvement to the AMS website in 2012 was the enhancement of the Prizes and Awards area, which now enables browsing of the archive by prize or award, recipient name and/or year; includes upcoming deadlines for nominations; and accepts online nomination submissions. I invite the mathematical community to peruse the list of impressive recipients and to nominate colleagues.

### Publications

Mathematical Reviews (MR) added almost 125,000 items to the MR database in 2012, including more than 85,000 reviews. The size of the mathematics research literature continues to grow at a rate of about 3.5 percent per year, steadily increasing the workload for MR. Nevertheless, the staff of MR continues to enrich MathSciNet® with features that benefit its users. In 2012 thirty new Reference List Journals were added, Preliminary Data was implemented to accelerate the availability of information about new papers, and mobile pairing was added to facilitate access from mobile devices.

The Contemporary Mathematics series was offered as an electronic subscription product in 2012. At the same time, the backlist of about 550 Contemporary Mathematics volumes was also offered to research libraries as a collection of eBooks. The Society added the Proceedings of Symposia in Applied Mathematics (seventy-one volumes, 1949–2012) and Proceedings of Symposia in Pure Mathematics (eighty-six volumes, 1959–2012) to the eBook collections in 2012. The retrodigitization of other



principal series—Mathematical Surveys and Monographs, Graduate Studies in Mathematics, and Student Mathematical Library—was also initiated.

The AMS also continued to develop its Undergraduate Texts series by publishing several high-quality undergraduate

textbooks and making them available to students at prices that are significantly lower than textbook prices from large commercial publishers. The book program also added notable titles to all of the text and research monograph series. Among them were László Lovász, *Large Networks and Graph Limits* (Colloquium Publications); Peter Duren, *Invitation to Classical Analysis* (Pure and Applied Undergraduate Texts); John B. Walsh, *Knowing the Odds: An Introduction to Probability* (Graduate Studies in Mathematics); and David M. Clark, *Euclidean Geometry: A Guided Inquiry Approach* (Mathematical Circles Library).

The four primary research journals published 14,400 pages in 2012. The number of submitted articles continues to increase, and the overall growth of the mathematics literature is steadily increasing. To accommodate the growth, the Society is exploring ways that it can increase the total size of its journals without a commensurate increase in costs to the community. In addition, our creative software groups in Providence and Ann Arbor are improving the delivery of electronic publications. In 2012 enhanced reference lists were added to the abstract pages for the journals, mobile pairing was implemented to simplify delivery of electronic products to mobile devices, and Counter Compliant usage statistics were added to improve information resources for librarians.

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### Advocacy and Partnerships for Mathematics and Science

The AMS Public Awareness Office continued its support of two popular programs:

The fourth national Who Wants to Be a Mathematician contest for high school students was held at JMM 2013. The national competition is the culmination of qualifying rounds that are open to high school students throughout the U.S. Calvin Deng, a senior from the North Carolina School of Science and Mathematics, won US\$5,000 and a TI-Nspire CX for himself and US\$5,000 for the math department at his school. Deng was a gold medal winner at the 2012 International Mathematical Olympiad.

AMS posters and Mathematical Moments, a collection of free eye-catching posters on many topics, are the result of collaboration between the AMS Public Awareness Office and graphics arts staff. They are widely distributed and generate many orders and much appreciation from high school teachers and others.

The AMS Washington Office sponsored a congressional briefing in December 2012 to inform members of Congress and congressional staff about the impact of mathematics



**Calvin Deng, winner of the 2013 national Who Wants to Be a Mathematician competition.**

on important issues of broad interest. James A. Yorke, Distinguished University Professor of Mathematics and Physics at the University of Maryland, presented “Chaos and avalanches in science and socio-political systems”. He talked about the science of chaos and how it has completely changed the understanding of physical processes in the last thirty years. His presentation demonstrated how political upheavals have much in common with avalanches and earthquakes.

Long-standing collaboration with other organizations includes the AMS participation in two fellowship programs offered through the American Association for the Advancement of Science (AAAS): Congressional Fellowships and Mass Media Fellowships.

Samuel M. Rankin III, director of the AMS Washington Office, serves as chairman of the Coalition for National Science Funding, a coalition that supports the goal of increasing the national investment in the National Science Foundation’s research and education programs. The AMS is one of the participating societies in the Conference Board of the Mathematical Sciences, the International Mathematical Union, and the Joint Policy Board for Mathematics.

Though not without challenges facing all professional societies, the Society continued to fulfill its mission, maintaining excellence in mathematical sciences research, advancing the mathematics profession, supporting mathematics education at all levels, and fostering awareness and appreciation of mathematics.

—Donald McClure  
Executive Director