

Conferences

Mathematics at the 2016 AAAS Meeting

Washington Marriott, Wardman Park, Washington, DC

February 11–15, 2016

The American Association for the Advancement of Science (AAAS), founded in 1848, is the world's largest general scientific society and is the publisher of *Science*. The AAAS is divided into twenty-four disciplinary-based sections, including Section A (Mathematics). The 2016 annual meeting of the AAAS will be held in Washington on February 11–15. The theme of this year's meeting is "Global Science Engagement," and this year's meeting features sessions that will be of special interest to mathematicians, mathematics educators, and students of mathematics. The AAAS Annual Meeting is organized into symposia, which have three or more speakers and often a discussant who reflects on the talks that are given. Section A is sponsoring three symposia this year, featuring outstanding expository talks by prominent mathematicians and scientists. The three symposia sponsored by Section A this year are:

"Mathematics Making a Difference in Africa"

Applied mathematics is at a promising juncture in the developing world. Developing countries in Africa have recognized the very favorable cost-benefit ratio of mathematics as part of the effort to cope with pressing economic and humanitarian issues, including climate and environmental threats, the spread of disease, and urbanization. Applied mathematics has become a regional priority for research and education, and the last few years have seen the creation of several mathematical research centers in Africa, funded by the World Bank and international organizations and promoted by the Next Einstein Initiative. These innovative centers are now actively engaged in training a cadre of mathematical scientists and partnering with Western institutions of higher education. Speakers in

this symposium will discuss recent progress in applied mathematics in Africa, how universities can be effective partners in modeling projects to promote development, and how educational resources and research tools can be shared.

"Mathematics and Music"

Mathematics may be the most abstract of the sciences, and music the most abstract of the arts. Mathematics deals with conceptual and logical truth and appreciates intrinsic beauty. Music can involve a similar appreciation of abstract relationships, though it also evokes mood and emotion through tones and rhythm. Thinkers from Pythagoras to Vincenzo Galilei and Euler have noted the intersections between the disciplines. This symposium considers how mathematics and music overlap: the tuning of chords and how this relates to overtones; the geometry arising from a new framework for the varied array of chord progressions in Western music; and the structural coherence needed to make a piece of music rhetorically viable.

"Massively-Collaborative Global Research in Mathematics and Science"

In recent years, dozens of research projects have emerged that make novel use of computing and communication technologies, dramatically expanding the types of problems that can be considered and leading to breakthroughs in many areas of science. Distributed computing projects can address the design of molecules, improve climate prediction models, analyze astronomical data from radio telescopes, identify prime numbers and elliptic curve factorizations, and develop sustainable water use models, to name a few uses. In addition, contests such as those hosted by InnoCentive



ICERM

Institute for Computational and Experimental Research in Mathematics

Summer Workshops 2016

Effective and Algorithmic Methods in Hyperbolic Geometry and Free Groups

May 16-20, 2016

Organizing Committee > **Tarik Aougab**, Brown University; **Jeffrey Brock**, Brown University; **Mladen Bestvina**, University of Utah; **Eriko Hironaka**, Florida State University; **Johanna Mangahas**, University at Buffalo, SUNY

Algorithmic Coding Theory

June 13-17, 2016

Organizing Committee > **Mary Wootters**, Carnegie Mellon University; **Atri Rudra**, University at Buffalo, SUNY; **Hamed Hassani**, ETH Zurich

Illustrating Mathematics

June 27-July 1, 2016

Organizing Committee > **Kelly Delp**, Cornell University; **Saul Schleimer**, University of Warwick; **Henry Segerman**, Oklahoma State University; **Laura Taalman**, James Madison University

Stochastic Numerical Algorithms, Multiscale Modeling and High-dimensional Data Analytics

July 18-22, 2016

Organizing Committee > **Mark Girolami**, University of Warwick; **Susan Holmes**, Stanford University; **Benedict Leimkuhler**, University of Edinburgh; **Mauro Maggioni**, Duke University

Cycles on Moduli Spaces, Geometric Invariant Theory, and Dynamics

August 1-5, 2016

Organizing Committee > **Ana-Maria Castravet**, Northeastern University; **Dawei Chen**, Boston College; **Maksym Fedorchuk**, Boston College; **Anton Zorich**, Institut de Mathématiques de Jussieu

Ways to participate:

Propose a:

- semester program
- topical workshop
- small group research program
- summer undergrad program

Apply for a:

- semester program or workshop
- postdoctoral fellowship

Become an:

- academic or corporate sponsor

About ICERM: The Institute for Computational and Experimental Research in Mathematics is a National Science Foundation Mathematics Institute at Brown University in Providence, RI.

icerm.brown.edu



BROWN

or Challenge.gov call for people to work individually or collectively to solve problems posed by industry or government. These projects use the Internet to collaborate across national boundaries, pulling together diverse expertise and “citizen scientists” to implement extensive computer calculations (e.g., running simulations from high-energy physics or checking mathematical proofs), or to take advantage of “human computing” (e.g., digitizing old texts or studying images from the Hubble Space Telescope by dividing work into micro-tasks or games). This session describes specific projects—protein folding leading to drug development, and the identification of prime numbers with implications for cryptography—accompanied by an overarching discussion of the field of massively-collaborative global research.