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# Mathematics Opportunities

## AMS-AAAS Mass Media Summer Fellowships

The American Mathematical Society provides support each year for a graduate student in the mathematical sciences to participate in the American Association for the Advancement of Science (AAAS) Mass Media Science & Engineering Fellows Program. This summer fellowship program pairs graduate students with major media outlets nationwide where they will research, write, and report on science news and use their skills to bring technical subjects to the general public.

The principal goal of the program is to increase the public's understanding of science and technology by strengthening the connection between scientists and journalists to improve coverage of science-related issues in the media. Past AMS-sponsored fellows have held positions at National Public Radio, *WIRED*, *Scientific American*, Voice of America, *The Oregonian*, and the *Milwaukee Journal Sentinel*.

Fellows receive a weekly stipend of US\$500, plus travel expenses, to work for ten weeks during the summer as reporters, researchers, and production assistants in newsrooms across the country. They observe and participate in the process by which events and ideas become news, improve their ability to communicate about complex technical subjects in a manner understandable to the public, and increase their understanding of editorial decision making and of how information is effectively disseminated. Each fellow attends an orientation and evaluation session in Washington, D.C., and begins the internship in mid-June.

Fellows submit interim and final reports to AAAS. A wrap-up session is held at the end of the summer.

Mathematical sciences faculty are urged to make their graduate students aware of this program. The deadline to apply for fellowships for the summer of 2015 is **January 15, 2015**. Further information about the fellowship program and application procedures is available online at [www.aaas.org/program/aaas-mass-media-science-engineering-fellows-program](http://www.aaas.org/program/aaas-mass-media-science-engineering-fellows-program), or applicants may contact Dione Rossiter, Project Director, AAAS Mass Media Science & Engineering Fellows Program, 1200 New York Avenue, NW, Washington, DC 20005; telephone 202-326-6645; email [drossite@aaas.org](mailto:drossite@aaas.org). Further information is also available at [www.ams.org/programs/ams-fellowships/media-fellow/massmediafellow](http://www.ams.org/programs/ams-fellowships/media-fellow/massmediafellow).

—AMS Washington Office

## STaR Program for Early Career Mathematics Educators

The Service, Teaching, and Research (STaR) Program is a one-year induction program for early-career mathematics educators working at institutions of higher education. The program was initiated through a grant from the National Science Foundation (NSF). It includes a five-day summer institute, academic-year networking via electronic means, and a follow-up session in conjunction with the annual meeting of the Association of Mathematics Teacher Educators (AMTE).

The Association of Mathematics Teacher Educators provides a professional home for the program. To date, 175 early-career mathematics educators working at 128 institutions of higher education (in forty-one states) have completed the program. A list of previous STaR Fellows and a summary of some current activities are available at [starfellows.com](http://starfellows.com).

The program is now accepting applications for the 2015 cohort of STaR Fellows. This cohort will meet for the summer institute in Park City, Utah, June 13–18, 2015. Eligibility is limited to new faculty with doctorates in mathematics education in their first or second years of a tenure-track appointment as mathematics educators at U.S. institutions of higher education. The faculty appointment may be in a department of mathematics or in a school, college, or department of education.

More information and application materials are available at [matheddb.missouri.edu/star/](http://matheddb.missouri.edu/star/). Completed applications are due by **December 1, 2014**. Contact Jeff Wanko at [wankojj@miamioh.edu](mailto:wankojj@miamioh.edu) for more information.

—From a STaR announcement

## NSF Program in Computational and Data-Enabled Science and Engineering in Mathematical and Statistical Sciences

Computational and data-enabled science and engineering in mathematical and statistical sciences (CDS&E-MSS) is emerging as a distinct intellectual and technological discipline lying at the interface of mathematics, statistics, computational science, core sciences, and engineering disciplines. CDS&E-MSS, broadly interpreted, now affects virtually every area of science and technology,

revolutionizing the way science and engineering are done. The CDS&E-MSS program in the Division of Mathematical Sciences (DMS) of the National Science Foundation (NSF), in partnership with the Office of Cyberinfrastructure, supports fundamental research at the core of this emerging discipline. It supports broadly innovative, ambitious, and transformative research that will lead to significant advancement in CDS&E-MSS. The emphasis will be on mathematical, statistical, computational, and algorithmic developments, as well as their applications in advancing modern cyberinfrastructure and scientific discovery. Multi-disciplinary collaboration and the training of the next generation of data and computational scientists firmly grounded and trained in mathematics and statistics will be strongly encouraged. The research topics supported by CDS&E-MSS in mathematical and statistical sciences will be rooted in mathematics and statistics and will address computational and big data challenges and directly promote discoveries and innovations at the frontiers of science and engineering. The overall impact in the mathematical and statistical sciences of the proposed work will be a review criterion.

The window for submission of proposals is **November 25–December 9, 2014**. For more details see [www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=504687&WT.mc\\_id=USNSF\\_25&WT.mc\\_ev=click](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504687&WT.mc_id=USNSF_25&WT.mc_ev=click).

—From an NSF announcement

## NDSEG Fellowships

As a means of increasing the number of U.S. citizens trained in disciplines of military importance in science and engineering, the Department of Defense (DoD) awards National Defense Science and Engineering Graduate (NDSEG) Fellowships each year to individuals who have demonstrated ability and special aptitude for advanced training in science and engineering. The fellowships are awarded for a period of three years for study and research leading to doctoral degrees in any of fifteen scientific disciplines.

The NDSEG Fellowship Program is open only to applicants who are citizens or nationals of the United States. NDSEG Fellowships are intended for students at or near the beginning of their graduate studies in science or engineering. Applicants must have received or be on track to receive their bachelor's degrees by fall of 2015. Fellows selected in spring 2015 must begin their fellowship tenures in fall 2015. Fellowships are tenable only at U.S. institutions of higher education offering doctoral degrees in the scientific and engineering disciplines specified. Fellows will receive full tuition and stipends for 12-month tenures: US\$30,500 for the first year, US\$31,000 for the second year, and US\$31,500 for the third year. Applications are encouraged from women, persons with disabilities, and minorities, including members of ethnic minority groups such as African American, American Indian and Alaska Native, Asian, Native Hawaiian and other Pacific Islander, Hispanic, or Latino.

Complete applications must be submitted electronically by **December 12, 2014**. Application forms are available online at [ndseg.asee.org/apply\\_online](http://ndseg.asee.org/apply_online). For further information, see [ndseg.asee.org/](http://ndseg.asee.org/).

—From an NDSEG announcement

## CRM Intensive Research Programs

The Centre de Recerca Matemàtica (CRM) in Barcelona, Spain, invites proposals for Intensive Research Programs in any branch of mathematics and its applications. Programs will be organized during one of the following periods: September–October 2015 and after August 2016.

CRM Intensive Research Programs consist of periods of intensive research in a given area of the mathematical sciences and their applications, bringing together researchers from different institutions to work on open problems in the chosen area and to analyze its present state and perspectives. Programs may run for periods of from one to five months.

The deadline for preliminary proposals is **December 14, 2014**. The deadline for final proposals is **January 11, 2015**. For more information see the website [www.crm.cat/en/Host/SciEvents/IRP/Pages/default.aspx](http://www.crm.cat/en/Host/SciEvents/IRP/Pages/default.aspx).

—From a CRM announcement

## News from IPAM

The Institute for Pure and Applied Mathematics (IPAM) is a National Science Foundation (NSF) mathematics institute located at the University of California Los Angeles. IPAM offers programs that encourage collaboration across disciplines and between two areas of mathematics.

IPAM holds long programs (three months) and workshops (three to five days) throughout the academic year for junior and senior mathematicians and scientists who work in academia, the national laboratories, and industry. In the summer, IPAM offers an industrial research experience for students and a summer school for graduate students and postdocs. IPAM seeks program proposals from the math and science communities. Please send your idea for a workshop, long program, or summer school to [director@ipam.ucla.edu](mailto:director@ipam.ucla.edu).

IPAM will host the Latinas in the Mathematical Sciences Conference on April 9–11, 2015. The conference will feature talks by prominent and promising Latina/o mathematicians and statisticians. It will also include mentoring and networking activities and opportunities for students to present their research.

Applications for travel support are due **February 9, 2015**. IPAM's graduate summer school for 2015 is entitled Games and Contracts for Cyber-Physical Security and will be held at the University of California Los Angeles on July 7–23, 2015. The application deadline is **March 31, 2015**.

## About the Cover

### Which is the good Theta, and which is the mock?

The question posed on the cover is explained in William Duke's article on page 1314 of this issue. The film reviewed by Mark Saul in this issue also refers to mock  $\theta$  functions quite often. The film's story brings out, once again, how extraordinary Ramanujan's insight was.

Our thanks to Cole Porter and Dick Gross for assistance.

—Bill Casselman  
 Graphics Editor  
 notices-covers@ams.org



IPAM's Research in Industrial Projects for Students (RIPS) programs will accept applications from undergraduate and graduate students through **February 12, 2015**.

IPAM's other upcoming programs follow. See the website [www.ipam.ucla.edu](http://www.ipam.ucla.edu) for detailed information and application and registration forms.

**January 12–February 27, 2015: Winter Workshops.** You may apply for support or register for each workshop online.

**January 12–16, 2015.** Multiple Sequence Alignment.  
**January 26–30, 2015.** Symmetry and Topology in Quantum Matter.

**February 4–6, 2015.** Computational Photography and Intelligent Cameras.

**February 9–13, 2015.** Zariski-Dense Subgroups.  
**February 23–27, 2015.** Machine Learning for Many-Particle Systems.

**March 9–June 12, 2015: Broad Perspectives and New Directions in Financial Mathematics.** You may apply online for support to be a core participant for the entire program or to attend any of the following individual workshops.

**March 10–13, 2015.** Tutorials.  
**March 23–27, 2015.** Workshop I: Systemic Risk and the Financial Networks.

**April 13–17, 2015.** Workshop II: The Mathematics of High Frequency Financial Markets.

**May 4–8, 2015.** Workshop III: Commodity Markets and Their Financialization.

**May 18–22, 2015.** Workshop IV: Forensic Analysis of Financial Data.

**September 8–December 11, 2015. New Directions in Mathematical Approaches for Traffic Flow Management.** You may apply online for support to be a core participant for the entire program or to attend any of the following individual workshops.

**September 9–12, 2015.** Tutorials.  
**September 28–October 2, 2015.** Workshop I: Mathematical Foundations of Traffic.

**October 12–16, 2015.** Workshop II: Traffic Estimation.  
**October 26–30, 2015.** Workshop III: Traffic Control.

**November 16–20, 2015.** Workshop IV: Decision Support for Traffic.

**March 7–June 10, 2016: Culture Analytics.** You may apply online for support to be a core participant for the entire program or to attend any of the individual workshops.

**March 8–11, 2016.** Tutorials.  
**March 21–24, 2016.** Workshop I: Mathematical Analysis of Cultural Expressive Forms: Images, Videos, Music, and Cognition.

**April 11–15, 2016.** Workshop II: Culture Analytics and User Experience Design.

**May 9–13, 2016.** Workshop III: Cultural Patterns: Multiscale Data-Driven Models.

**May 23–27, 2016.** Workshop IV: Mathematical Analysis of Cultural Expressive Forms: Text Data.

—IPAM announcement