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# Mathematics People

## MacArthur Fellowships Awarded

Two mathematical scientists have been awarded fellowships from the John D. and Catherine T. MacArthur Foundation.

TERENCE TAO of the University of California, Los Angeles, was honored for “bringing technical brilliance and profound insight to a host of seemingly intractable problems in such areas as partial differential equations, harmonic analysis, combinatorics, and number theory.”

LUIS VON AHN of Carnegie Mellon University was selected for his work “at the intersection of cryptography and artificial and natural intelligence to address problems of profound theoretical and practical importance relating to Internet security and functionality.”

The MacArthur Fellows Program awards five-year unrestricted fellowships of US\$500,000 each to individuals across all ages and fields who show exceptional merit and promise of continued creative work. It is limited to U.S. citizens and other residents of the United States.

—From a MacArthur Foundation announcement

## 2007 ICIAM Prizes Announced

The International Congress on Industrial and Applied Mathematics (ICIAM) has chosen six mathematicians to receive its 2007 prizes.

INGRID DAUBECHIES of Princeton University and HEINZ ENGL of the Johannes Kepler Universität Linz, Austria, and the Austrian Academy of Sciences have been chosen as joint winners of the Pioneer Prize. This prize recognizes pioneering work introducing applied mathematical methods and scientific computing techniques to an industrial problem area or a new scientific field of applications. According to the prize citation, Daubechies’ work “is a permanent contribution to mathematics, science, and engineering and has found widespread use in image processing and time frequency analysis. Daubechies’ best known achievement is her construction of compactly supported wavelets in the late 1980s. Since that time she has advanced the development of biorthogonal wavelet bases. These bases are currently the most commonly used bases for data compression.” Engl was honored “for his work on the applications of theoretical work in inverse problems to the solution of a wide range of industrial problems; for his promotion worldwide of industrial/applied mathematics problem solving; for his initiative to include very active

applied mathematics components in the Austrian mathematical community; and for the founding of the Austrian Academy of Sciences-sponsored RICAM, the Radon Institute for Computational and Applied Mathematics.”

FELIX OTTO of the Universität Bonn has been chosen to receive the Collatz Prize. This prize provides international recognition to individual scientists under forty-two years of age for outstanding work on industrial and applied mathematics. Otto was honored for his “fundamental contributions in areas ranging from micromagnetics to coarsening rates during phase separation to mass transportation problems.”

JOSEPH KELLER of Stanford University is the recipient of the Lagrange Prize, which was established to provide international recognition to individual mathematicians who have made an exceptional contribution to applied mathematics throughout their careers. The citation states that his “profound contributions to applied mathematics have had great impact in science and engineering as well as in pure mathematics. He developed the geometrical theory of diffraction that provided the first systematic description of wave propagation around edges and corners of an obstacle. It has been widely used for radar reflection from targets, elastic wave scattering from defects in solids, acoustic wave propagation in the ocean radar, and many other fields. It also served as a starting point for development of the modern theory of linear partial differential equations.” Other areas in which he has contributed include singular perturbation theory, bifurcation studies in partial differential equations, nonlinear geometrical optics and acoustics, inverse scattering, effective equations for composite media, biophysics, biomechanics, carcinogenesis, optimal design, hydrodynamic surface waves, transport theory, and waves in random media.

PETER DEUFLHARD of the Zuse Institute Berlin has been chosen to receive the Maxwell Prize, which recognizes a mathematician who has demonstrated originality in applied mathematics. The prize citation states that “his contributions to algorithm-oriented numerical analysis are fundamental and range from highly nonlinear algebraic systems through large-scale ordinary and partial differential equations to Markov chains. Within these fields they cover direct and inverse problems, optimization aspects, and optimal control.” He has made contributions in such diverse areas as chemical engineering, microwave technology, medicine, and biotechnology.

GILBERT STRANG of the Massachusetts Institute of Technology has been awarded the Su Buchin Prize, which recognizes an outstanding contribution by an individual in the application of mathematics to emerging economies and

human development, in particular at the economic and cultural level in developing countries. According to the prize citation, Strang “has made great contributions in many areas of pure and applied mathematics, including finite-element methods, linear algebra and matrix theory, wavelet analysis, signal and image processing, geodesy, and telecommunications. He has also made remarkable contributions to the promotion of mathematical research and education in developing countries and has had significant impact on human development in the area of mathematics.” He has visited China, Vietnam, Malaysia, Singapore, Brazil, Mexico, Tunisia, South Africa, Egypt, India, Korea, and Cyprus. “His great contribution in mathematics and his dedication to advancing public awareness of the power and potential of mathematics have made outstanding contributions to human development, which have benefited many students, teachers, and mathematicians.”

The prizes will be awarded at the sixth ICIAM, to be held in Zurich, Switzerland, July 16–20, 2007.

—From an ICIAM announcement

## CME-MSRI Prize Awarded

The Chicago Mercantile Exchange (CME), the largest and most diverse financial exchange, through its Center for Innovation, has partnered with the Mathematical Sciences Research Institute (MSRI) to create an annual award program, the CME/MSRI Prize. This award is designed to recognize individuals or groups who contribute original concepts and innovation in the use of mathematical, statistical, or computational methods for the study of the behavior of markets and more broadly of economics.

CME and MSRI have announced that STEPHEN A. ROSS, the Franco Modigliani Professor of Financial Economics at the Massachusetts Institute of Technology, is the inaugural recipient of the CME/MSRI Prize in Innovative Quantitative Applications.

Ross, a widely published author in finance and economics, is the discoverer of the “No Arbitrage Theorem of Asset Pricing”, the inventor of “Arbitrage Pricing Theory”, the author of *The Economic Theory of Agency*, as well as the codiscoverer of risk-neutral pricing and the binomial model for pricing derivatives. The focus of much of his work has been on understanding how markets price assets.

As this year’s recipient, Ross was presented with the CME/MSRI Prize at a recognition ceremony held on September 21, 2006, at CME in Chicago. In conjunction with the award ceremony, a seminar was held with Nobel Laureates Myron Scholes and Robert Merton speaking on the uses of mathematics in economics and the study of markets.

On the CME-MSRI Prize Selection Committee were: Darrell Duffie, James I. Miller Professor of Finance, Graduate School of Business, Stanford University; Leo Melamed, CME chairman emeritus; Myron Scholes, Frank E. Buck Professor of Finance, emeritus, Stanford University; Mark Rubinstein, Paul Stephens Professor of Applied Investment Analysis, Haas School of Business, University of

California, Berkeley; and Hugo Sonnenschein, president emeritus and Adam Smith Distinguished Service Professor, University of Chicago.

—From a CME News Release

## Cook Receives Synge Award

STEPHEN A. COOK of the University of Toronto has been awarded the John L. Synge Award of the Royal Society of Canada (RSC). He has achieved international recognition for providing a definition for “efficiently computable” and for giving mathematical evidence for a number of problems that were unlikely to be efficiently computable. He has made fundamental contributions in complexity theory, in the design and analysis of algorithms, in logic (notably proof complexity), and in programming language semantics. He continues to produce seminal contributions on feasible logics and complexity theory.

The Synge Award is given for outstanding research in any of the branches of the mathematical sciences. The award consists of a diploma and a cash amount of 2,500 Canadian dollars (approximately US\$2,240).

—From a Royal Society of Canada announcement

## 2006 CMS Awards Given

The Canadian Mathematical Society (CMS) has awarded the 2006 Adrien Pouliot Award to PETER TAYLOR of Queen’s University “for his outstanding contributions to the teaching and learning of mathematics in Canada,” including his “innovative approach to mathematics education.” According to the prize citation, his work “is grounded in an innovative and evolving curriculum philosophy and an approach to mathematics which is fundamentally aesthetic.” With a colleague from the university’s English department, he taught a course on mathematics and poetry that “immerses students in beautiful problems to reveal qualities shared by mathematics and poetry.” He also writes curricula with the Ontario Ministry of Education. The Adrien Pouliot Award is given to individuals or teams of individuals who have made significant and sustained contributions to mathematics education in Canada.

MICHAEL NEWMAN of the University of Waterloo is the recipient of the CMS Doctoral Prize, which recognizes outstanding performance by a doctoral student who graduated from a Canadian university. His dissertation for the University of Waterloo “presents extensions and applications of the Delsarte-Hoffman bound on the size of independent sets in graphs. The thesis interweaves the solutions of three intriguing yet ostensibly unrelated problems into a unified tapestry by virtue of their common methodological treatment. The results obtained are important and the exposition first-rate.”

MALCOLM HARPER of Champlain College, St. Lambert, was awarded the G. de B. Robinson Award for his paper titled “ $Z[\sqrt{14}]$  is Euclidean”, published in the *Canadian Journal*

of *Mathematics* in 2004. The award recognizes the publication of excellent papers in the *Canadian Journal of Mathematics* and the *Canadian Mathematical Bulletin*.

—From a CMS announcement

## Landim Awarded 2006 TWAS Prize

CLAUDIO LANDIM of the Instituto de Matematica Pura e Aplicada, Rio de Janeiro, Brazil, has been awarded the 2006 Prize in Mathematics of the Academy of Sciences for the Developing World (TWAS). The prize carries a cash award of US\$10,000 and a plaque inscribed with the recipient's major contributions. It will be presented during a meeting in Pakistan in 2007.

—From a TWAS announcement

## Prizes of the Mathematical Society of Japan

The Mathematical Society of Japan (MSJ) awarded a number of prizes in spring 2006.

TAKURO MOCHIZUKI of Kyoto University was awarded the Spring Prize for his contributions to the study of asymptotic behavior of harmonic bundles. The Spring Prize is awarded annually to a mathematician who is not older than forty and who has made an outstanding contribution to mathematics.

The Algebra Prizes were awarded to MASAKI HANAMURA of Tohoku University for his contributions to the study of mixed motives and to HIROYUKI YOSHIDA of Kyoto University for his contributions to the study of automorphic forms and periods.

The Seki-Takakazu Prize, which honors people and organizations who have supported and encouraged the development of mathematics in Japan over many years, was awarded to the Japan-U.S. Mathematics Institute (JAMI). The purpose of the institute is to further cooperation in mathematics research between Japan and the United States through broadly based programs in mathematics.

—From a Mathematical Society of Japan announcement

## NDSEG Fellowships Awarded

Twelve mathematics graduate students have been awarded National Defense Science and Engineering Graduate (NDSEG) Fellowships by the Department of Defense (DoD). As a means of increasing the number of U.S. citizens trained in disciplines of military importance in science and engineering, DoD awards three-year fellowships to individuals at or near the beginning of their graduate studies who have demonstrated ability and special aptitude for advanced training in science and engineering. The fellowships are sponsored by the United States Army, Navy, and Air Force.

Following are the names of the fellows in mathematics, their institutions, and the offices that awarded the fellowships: JENNIFER BALAKRISHNAN (Princeton University), Army Research Office (ARO); DOUGLAS BALDWIN (University of Colorado at Boulder), Air Force Office of Scientific Research (AFOSR); ELIZABETH BEER (Johns Hopkins University), AFOSR; DAVID BROWN (University of California, Berkeley), ARO; ANDREW DITTMER (Harvard University), AFOSR; DAVID GOLDBERG (Massachusetts Institute of Technology), Office of Naval Research (ONR); ANDREW OBUS (University of Pennsylvania), ARO; ALEXANDRA OVETSKY (Massachusetts Institute of Technology), AFOSR; DAVID ROE (Harvard University), ARO; STEVEN SIVEK (Massachusetts Institute of Technology), ARO; MAYANK VARIA (Massachusetts Institute of Technology), ONR; DANIELA WITTEN (Stanford University), AFOSR.

—From an NDSEG announcement

## Pi Mu Epsilon Student Paper Presentation Awards

Pi Mu Epsilon (PME), the U.S. honorary mathematics society, makes annual awards to recognize the best papers by undergraduate students presented at a PME student-paper session. This year the PME held a session in conjunction with the Mathematical Association of America MathFest in Knoxville, Tennessee, August 9–12, 2006. Each awardee received a prize of US\$150. The Pi Mu Epsilon Awards for best presentations are sponsored by the AMS.

Seven students were chosen to receive these awards. Their names, institutions, and titles of their talks follow: TARA CRUICKSHANK, Youngstown State University, "Statistical Analysis of the Percentage of Body Fat in Men"; DAVID GOHLKE, Youngstown State University, "Introduction to and Applications of Markov Chains"; SARA JENSEN, Carthage College, "The Mathematics of the Game of Set"; LEE KENNARD, Kenyon College, "Number Theory and Ice Cream Cones"; DAVID MARTIN, Youngstown State University, "A Solution to PME Journal Problem 1113, Fall 2005"; WILLIAM STANTON, Kenyon College, "Perfect Numbers and the Abundance Index"; and JEFFREY WARD, Clarkson University, "The Loneliest Number".

—From a Pi Mu Epsilon announcement

## B. H. Neumann Awards Given

The B. H. Neumann Awards for 2006 have been awarded by the Board of the Australian Mathematics Trust to BRENDAN CASE, a mathematics teacher in South Africa; TAN MUI HONG; and ROD WATSON, a mathematics teacher in Australia. The awards, named for Bernhard H. Neumann, are presented each year to mathematicians who have made important contributions over many years to the enrichment of mathematics learning in Australia and its region.

—Board of the Australian Mathematics Trust