
Mathematics People

Guth Awarded 2013 Salem Prize

LAWRENCE GUTH of the Massachusetts Institute of Technology has been awarded the 2013 Salem Prize for his “major contributions to geometry and combinatorics. His brilliant insights led to the solution of old problems and the introduction of powerful new techniques,” according to the prize citation. The prize, in memory of Raphael Salem, is awarded yearly to young researchers for outstanding contributions to the field of analysis.

Previous winners of the Salem Prize include: N. Varopoulos, R. Hunt, Y. Meyer, C. Fefferman, T. Korner, E. M. Nikišin, H. Montgomery, W. Beckner, M. R. Herman, S. B. Bočkarëv, B. E. Dahlberg, G. Pisier, S. Pichorides, P. Jones, A. B. Aleksandrov, J. Bourgain, C. Kenig, T. Wolff, N. G. Makarov, G. David, J. L. Journé, A. L. Vol’berg, J.-C. Yoccoz, S. V. Konyagin, C. McMullen, M. Shishikura, S. Treil, K. Astala, H. Eliasson, M. Lacey, C. Thiele, T. Wooley, F. Nazarov, T. Tao, O. Schramm, S. Smirnov, X. Tolsa, E. Lindenstrauss, K. Soundararajan, B. Green, A. Avila, S. Petermichl, A. Venkatesh, B. Klartag, A. Naor, N. Anantharaman, D. Zhan, and J. Dubedat.

The prize committee consisted of J. Bourgain, C. Fefferman, P. Jones, N. Nikolski, G. Pisier, P. Sarnak, and J.-C. Yoccoz.

—*Salem Prize Committee announcement*

Kamran Awarded 2014 CRM-Fields-PIMS Prize

NIKY KAMRAN of McGill University has been awarded the CRM-Fields-PIMS Prize for 2014 for his work in analysis and differential geometry. His work is in the theory of exterior differential systems and Lie theory, a central area of the geometric analysis of systems of partial differential equations, and the mathematical analysis of general relativity. According to the prize citation, his work on exterior differential systems “has its roots in the foundational insight of E. Cartan, which describes local geometrical objects in terms of systems of differential forms which are invariant under diffeomorphisms and other infinite dimensional Lie (pseudo)group actions. Professor Kamran’s principal contributions have been in the theory of existence of solutions and the classification of infinite dimensional symmetries. His publications on isotropy subgroups of transitive analytic Lie pseudogroups of

infinite type are definitive, and involve global elements, such as the cohomology of certain differential complexes, and local, which for example include Malgrange’s estimates arising from his proof of the Cartan-Kähler theorem.”

The CRM-Fields-PIMS Prize recognizes exceptional achievement in the area of mathematical sciences. It is awarded by the Centre de Recherches Mathématiques (CRM), the Fields Institute, and the Pacific Institute for Mathematical Sciences (PIMS).

—*From a CRM announcement*

ICMI Klein and Freudenthal Medals Awarded

MICHÈLE ARTIGUE of Université Paris Diderot has been awarded the 2013 Felix Klein Medal of the International Commission on Mathematical Instruction (ICMI) “in recognition of her more than thirty years of sustained, consistent, and outstanding lifetime achievements in mathematics education research and development.” According to the prize citation, “she has been a leading figure in developing and strengthening new directions of research inquiry in areas as diverse as advanced mathematical thinking, the role of technological tools in the teaching and learning of mathematics, institutional considerations in the professional development of teachers, the articulation of didactical theory and methodology, and the networking of theoretical frameworks in mathematics education research.”

FREDERICK K. S. LEUNG of the University of Hong Kong has been awarded the 2013 Hans Freudenthal Medal of the ICMI “in recognition of his research in comparative studies of mathematics education and on the influence of culture on mathematics teaching and learning.” According to the prize citation, “his groundbreaking work, for which he is internationally known, is the utilization of the perspective of the Confucian Heritage Culture to explain the superior mathematics achievement of East Asian students in international studies.”

The Klein Medal honors lifetime achievement in mathematics education research. The Freudenthal Medal recognizes a major cumulative program of research.

—*From ICMI announcements*

Boyd Receives IEEE Control Systems Award

STEPHEN P. BOYD of Stanford University has been named the recipient of the 2013 Control Systems Award of the Institute of Electrical and Electronics Engineers (IEEE). According to the prize citation, “Stephen P. Boyd’s vision that convex optimization methods can transform the theory and practice of control system analysis and design has led to one of the most important developments in the field over the last twenty-five years. Working with other researchers, Boyd developed a new style of research in control that combines advanced mathematical concepts with effective numerical computation, using a formal reduction process of a control problem to a convex optimization problem. Convex optimization problems are readily and reliably solved numerically, so the reduction gives a theoretical and practical solution of the original problem. No one is considered to have done more to articulate, develop, systematize, advance, and popularize the role of convex optimization than Dr. Boyd. He has helped to develop many of the basic computational techniques, showed how to apply them to problems in systems and control, and illuminated the powerful connections to essential concepts in other disciplines, such as computational mathematics, statistics, machine learning, finance, circuit design, networking, and signal processing.”

—From an IEEE announcement

Fox and Yun Awarded 2013 Packard Fellowships

JACOB FOX of the Massachusetts Institute of Technology and ZHIWEI YUN of Stanford University have been awarded Packard Fellowships by the David and Lucile Packard Foundation, which provides young scientists early in their careers with flexible funding and the freedom to take risks and explore new frontiers in their fields of study. Fox works on developing powerful techniques to solve problems concerning large networks; his research is at the interface between combinatorics and computer science, geometry, analysis, and number theory. Yun’s research project focuses on the interaction between algebraic geometry, number theory, and representation theory of groups. He looks for ways to apply methods from one of these areas to solve problems in another. These problems are closely related to the conjectures of Langlands. They will receive grants of US\$875,000 each over five years to pursue their research.

—From a Packard Foundation announcement

2013 Rosenthal Prize Awarded

The 2013 Rosenthal Prize for Innovation in Math Teaching has been awarded to TRANG VU, a teacher at La Jolla

High School in La Jolla, California. BRENT FERGUSON, who teaches at the Lawrenceville School in Lawrenceville, New Jersey, was selected as runner-up. Trang was awarded a cash prize of US\$25,000, and Brent received a prize of US\$10,000. The annual Rosenthal Prize for Innovation in Math Teaching is designed to recognize and promote hands-on math teaching in the upper elementary and middle school classrooms.

—National Museum of Mathematics announcement

Prizes of the Math Society of Japan

The Mathematical Society of Japan (MSJ) has awarded the following prizes for 2013.

The 2013 Autumn Prize has been awarded to MASATO TSUJII of Kyosho University for his outstanding contributions to functional analytic methods in ergodic theory of differentiable dynamical systems. The Autumn Prize is awarded without age restriction to people who have made exceptional contributions in their fields of research.

The 2013 Analysis Prizes have been awarded to YOSHIHIRO TONEGAWA of Hokkaido University for the study of regularity theory for surface evolution equations, to YASUO WATATANI of Kyushu University for research on operator algebras from the multidirectional viewpoint and its applications, and to TOSHIRO WATANABE of the University of Aizu for profound studies of distributional properties of Lévy processes.

The 2013 Geometry Prizes have been awarded to TOSHITAKE KOHNO of the University of Tokyo for work in geometric representation theory for quantum groups and to KATSUTOSHI YAMANOI of the Tokyo Institute of Technology for the affirmative solution of the Gol’dberg-Mues conjecture.

The 2013 Takebe Katahiro Prizes have been awarded to BENOÎT COLLINS of Tohoku University for his work in free probability and its applications, to TAKEHIKO YASUDA of Osaka University for work in motivic integration and singularities, and to KENTARO NAGAO of Nagoya University for work in Donaldson-Thomas theory and cluster algebras. The prize is given to young researchers who have obtained outstanding results.

The 2013 Takebe Katahiro Prizes for Encouragement of Young Researchers have been awarded to the following: NAO HAMAMUKI of the University of Tokyo for work in analysis on Hamilton-Jacobi equations with its applications to crystal growth phenomena, to HIROMU TANAKA of Kyoto University for work in minimal model theory in positive characteristic, to HAJIME KANEKO of Nihon University for work in Diophantine approximation of algebraic numbers and a conjecture of Emile Borel, to YOH TANIMOTO of the University of Tokyo for work in operator algebraic methods in two-dimensional quantum field theory, to HISASHI KASUYA of Tokyo Institute of Technology for work in topology and geometry of solvmanifolds, and to Kenta Ozeki of the National Institute of Informatics and JST-ERATO for work in Hamiltonicity of graphs. The prize

is intended for young mathematicians who are deemed to have begun promising careers in research by obtaining significant results.

The Journal of the Mathematical Society of Japan Outstanding Paper Prizes for 2013 have been awarded to NOBUAKI YAGITA of the College of Education, Ibaraki University, for the paper “Chow rings of nonabelian p -groups of order p^3 ”, **64**, No. 2, 2012, pp. 507–531; and to GOPAL PRASAD of the University of Michigan and SAI-KEE YEUNG of Purdue University for their paper “Nonexistence of arithmetic fake compact Hermitian symmetric spaces of type other than A_n ($n \leq 4$)”, **64**, No. 3, 2012, pp. 683–731.

—From MSJ announcements

Rhodes Scholars Announced

The Rhodes Trust has named its scholars for 2014. Among them are three students who work in the mathematical sciences.

LINDSAY E. LEE of Oak Ridge, Tennessee, is a senior at the University of Tennessee, Knoxville, where she majors in mathematics and Spanish. She has done research at the National Institute of Mathematical and Biological Synthesis, at Vanderbilt Medical Center, and at the Oak Ridge National Laboratory. She has also served as the president of the Dean’s Student Advisory Council, as opinion columnist at the student newspaper, as a volunteer for the homeless, and in a children’s hospital. She has studied in Barcelona and Tokyo. Diagnosed with muscular dystrophy at age three, Lindsay is a passionate and highly successful advocate for disability issues locally, nationally, and globally. She plans to use her mathematical modeling expertise for analysis of successful health policy grounded in health care equality for all. Lindsay plans to do the M.Phil. in comparative social policy at Oxford.

JOHN MIKHAEL of Dallas, Texas, is a 2013 graduate of the Massachusetts Institute of Technology, where he majored in mathematics and where he is continuing his research in cognitive neuroscience. Of Lebanese as well as U.S. citizenship, his research focuses on the algorithms that underlie our ability to perform functions such as language and social perception. John has also worked as a tutor and lecturer in math, physics, and biology in summers in Syria and Lebanon and has been active as a peer health advocate and in interfaith relations. At Oxford, he plans to continue his research on the brain with a D.Phil. in neuroscience.

CALLA GLAVIN of Birmingham, Michigan, is a senior at the U. S. Military Academy, where she majors in mathematical sciences. Calla is Cadet Brigade Headquarters Company Commander, founding editor and editor-in-chief of the *Past in Review* student newspaper, and president of the society of women engineers. She is also goalkeeper for the army women’s lacrosse team and a Big Brother Big Sister mentor. As a student researcher at the disease biophysics group at Harvard University she has developed a mathematical model for a novel method of nanofiber formation for use in wound healing, and at the Los

Alamos National Laboratories she worked on algal bio-fuels. She intends to do the M.Sc. in applied statistics at Oxford.

—From a Rhodes Trust announcement

AAAS Fellows Chosen

The following mathematical scientists have been elected fellows of the Section on Mathematics of the American Association for the Advancement of Science (AAAS): STEVEN F. ASHBY, Pacific Northwest National Laboratory; CHRISTIAN BORGS, Microsoft Research; ROBERT P. LIPTON, Louisiana State University; DAVID C. MANDERSCHIED, The Ohio State University; QING NIE, University of California Irvine; PHILIP PROTTER, Columbia University; and SHMUEL WEINBERGER, University of Chicago.

—From an AAAS announcement

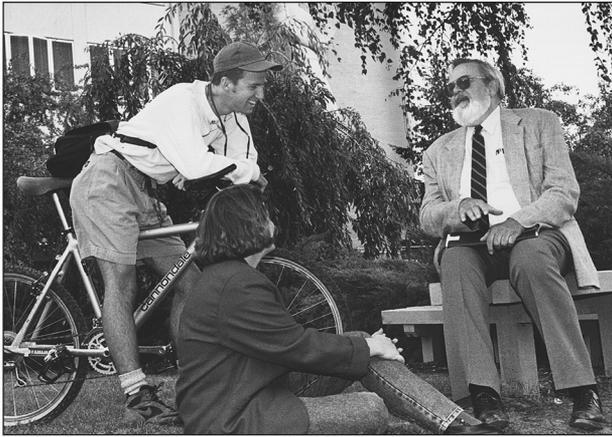
Donald W. Bushaw (1926–2012)

DONALD W. BUSHAW, a long-time faculty member at Washington State University, died in Portland, Oregon, on January 15, 2012. Born in Anacortes, Washington, on May 5, 1926, he attended Washington State as an undergraduate and went on to earn his Ph.D. at Princeton University in 1952, under the supervision of Solomon Lefschetz. He returned to Washington State where he remained, with the exception of a visiting appointment in 1972–73 at the Jagiellonian University in Krakow, for the remainder of his career. His dissertation appeared in the *Annals of Mathematics Studies*, no. 41, 1958, and has been cited as “the starting point of the modern development of optimal control theory.” Later Don returned to his roots in topology by writing a text, *Elements of General Topology* (Wiley, 1963), and after that he coauthored a text on mathematical economics. At Washington State he supervised seventeen Ph.D. dissertations.

Don was clearly a mathematician with broad mathematical interests, and his expertise outside mathematics was also astonishingly broad. He is reputed to have been fluent in French, German, Italian, Polish, Russian, and Chinese, but it didn’t stop there. Over a three-year period he visited Switzerland three times in order to learn Romansch, the least-used of that country’s four languages. And he regularly translated works from Chinese and Russian. Further, he actively collected materials in the Native-American languages in the Pacific Northwest, specifically Chinook in its various forms. He was also interested in modern poetry. This led one of his colleagues in WSU’s English Department to say that “if Don was not such a gentleman, we would have killed him a long time ago, because you always had the feeling he knew more about your area than you.”

A man of imposing presence, Don became an important figure on his campus: one-time chair of the Mathematics Department, on two occasions Acting Director

Photo courtesy of Washington State University News Service.



Donald Bushaw and students.

of Libraries at WSU, and Vice Provost for Instruction. He received various awards on his own campus as well as the MAA's Certificate of Meritorious Service in 1996. Between 1970 and 1973 he served on the MAA's national Board of Governors and on influential committees: the Committee on the Undergraduate Program in Mathematics (CUPM), which he chaired (1973-75), the CUPM Subcommittee on Quantitative Literacy (1989-95), and the AMS-MAA-SIAM Committee on Preparation for College Teaching. In addition, he was on the Board of Editors of the *College Mathematics Journal* for a record-breaking term—1984-99. Well known as a speaker and panelist for numerous sectional, regional, and national meetings of the AMS and the MAA,

he is also remembered for one of his more impressive appearances, an MAA meeting at Central Washington University in Ellensburg, WA, where, to an understandably small audience, he spoke only a few weeks after the eruption of nearby Mt. St. Helens in 1980. His topic was "Minimal complexities, maximal confusion, and mean people".

Bushaw's year in Krakow may have contributed to his strong interest in Polish mathematics—he was an honorary member of the Polish Mathematical Society—and, in particular, in the work of that wildly eccentric mathematician-philosopher-inventor-astronomer-lawyer, J. M. Hoene-Wroński, who inspired Bushaw to write a historical paper "Wroński's Canons of Logarithms" in *Mathematics Magazine* in 1983. Wroński's name is known to every student of elementary differential equations. Bushaw may have been drawn to him because both he and Wroński were polymaths. But the comparison ends there. Bushaw writes, in his colorful way, that Wroński was "brilliant, erudite, industrious, versatile, and ambitious," but also that he "had a difficult personality, and has been accused, not without plausibility, of arrogance, charlatanry, paranoia, and other blemishes of character. Thomas Muir [the scholar who named the Wrońskian for Wroński] called his style 'exhaustingly wearisome'." By contrast the words arrogance, charlatanry, and paranoia could never have applied to Don.

He is survived by his wife, Sylvia, and four children: Amy, Bruce, Gordon, and Margaret.

—Gerald L. Alexanderson and Kenneth A. Ross

Mathematics Opportunities

Call for Nominations for Prizes of the Academy of Sciences for the Developing World

The Academy of Sciences for the Developing World (TWAS) prizes are awarded to individual scientists in developing countries in recognition of outstanding contributions to knowledge in eight fields of science.

Eight awards are given each year in the fields of mathematics, medical sciences, biology, chemistry, physics, agricultural sciences, earth sciences, and engineering sciences. Each award consists of a prize of US\$15,000 and a plaque. Candidates for the awards must be scientists who have been working and living in a developing country for at least ten years.

The deadline for nominations for the 2014 prizes is **February 28, 2014**. Nomination forms should be sent to: TWAS Prizes, International Centre for Theoretical Physics (ICTP) Campus, Strada Costiera 11, 1-34151 Trieste, Italy; phone: 39 040 2240 387 fax: 39 040 2240 7387/7662;

email: prizes@twas.org. Further information is available on the World Wide Web at <http://www.twas.org/>.

—From a TWAS announcement

Call for Nominations for Graham Wright Award

The Canadian Mathematical Society (CMS) is seeking nominations for the 2014 Graham Wright Award for Distinguished Service. This award recognizes individuals who have made sustained and significant contributions to the Canadian mathematical community and, in particular, to the Canadian Mathematical Society. Nominations should include a reasonably detailed rationale and be submitted by **March 31, 2014**, to gwaward@cms.math.ca. For more information see the website <http://cms.math.ca/Prizes/dis-nom>.

—From a CMS announcement

Project NExT 2014–2015

Project NExT (New Experiences in Teaching) is a professional development program for new and recent Ph.D.'s in the mathematical sciences (including pure and applied mathematics, statistics, operations research, and mathematics education). It addresses all aspects of an academic career: improving the teaching and learning of mathematics, engaging in research and scholarship, and participating in professional activities. It also provides the participants with a network of peers and mentors as they assume these responsibilities. In 2014 about eighty faculty members from colleges and universities throughout the country will be selected to participate in a workshop preceding the Mathematical Association of America (MAA) summer meeting, in activities during the summer MAA meetings in 2014 and 2015 and the Joint Mathematics Meetings in January 2015, and in an electronic discussion network. Faculty for whom the 2014–2015 academic year

will be the first or second year of full-time teaching (post-Ph.D.) at the college or university level are invited to apply to become Project NExT Fellows.

Applications are invited for the 2014–2015 fellowship year, the twenty-first year of Project NExT. The deadline for applications is **April 11, 2014**. For more information, see the Project NExT website, <http://archives.math.utk.edu/projnext/> or contact Aparna Higgins, Director, at Aparna.Higgins@dayton.edu.

Project NExT is a program of the MAA. It receives major funding from the Mary P. Dolciani Halloran Foundation and additional funding from the Educational Advancement Foundation, the American Mathematical Society, the National Council of Teachers of Mathematics, the American Statistical Association, the American Institute of Mathematics, the Association for Symbolic Logic, W. H. Freeman Publishing Company, MAA Sections, and the Mathematical Association of America.

—Aparna Higgins, Director

For Your Information

Mathematics Awareness Month 2014: Mathematics, Magic, and Mystery

From magic squares and Möbius bands to magical card tricks and illusions, mysterious phenomena with elegant “Aha!” explanations have permeated mathematics for centuries. Such brain-teasing challenges promote creative and rational thinking, attract a wide range of people to the subject, and often inspire serious mathematical research.

The theme of Mathematics Awareness Month 2014, Mathematics, Magic, and Mystery, echoes the title of a 1956 book by renowned math popularizer Martin Gardner, whose extensive writings introduced the public to hexaflexagons, polyominoes, John Conway’s “Game of Life”, Penrose tiles, the Mandelbrot set, and much more. For more than half a century Gardner inspired enthusiasts of all ages to engage deeply with mathematics, and many of his readers chose to pursue it as a career. The year 2014 marks the centennial of Gardner’s birth.

The Mathematics Awareness Month website will feature thirty magical and mysterious topics—a new one will be unveiled each day in April 2014. Contributors will include professional mathematicians and magicians of the highest caliber. Each topic will be introduced by a short video and will include supporting materials at various levels of mathematical sophistication. Mathematics departments at the secondary and college levels will find a month full of interesting activities to use in their programs.

Mathematics Awareness Month is sponsored each year by the Joint Policy Board for Mathematics (American Mathematical Society, American Statistical Society, Mathematical Association of America, and Society for Industrial and Applied Mathematics) to recognize the importance of mathematics through written materials and an accompanying poster which highlight mathematical developments and applications in a particular area.

—Joint Policy Board for Mathematics