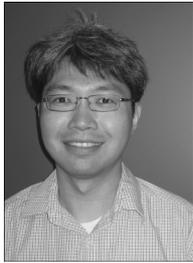


Mathematics People

2015–2016 AMS Centennial Fellowships Awarded

The AMS has awarded its Centennial Fellowships for 2015–16 to KYUNGYONG LEE and CHRISTIAN SCHNELL. The fellowship carries a stipend of US\$87,000, an expense allowance of US\$8,700, and a complimentary Society membership for one year.

Photo courtesy of the Department of Mathematics at Wayne State University.



Kyungyong Lee

Kyungyong Lee received his PhD in 2008 from the University of Michigan at Ann Arbor under the direction of Robert Lazarsfeld. He has held postdoctoral positions at Purdue University and the University of Connecticut. He has been an assistant professor at Wayne State University since 2011 and will be an assistant professor at the University of Nebraska–Lincoln starting in 2016.

Lee's research focuses on problems at the intersection of algebra, combinatorics, geometry, and topology. In particular, he is currently interested in cluster algebras. He will use the Centennial Fellowship to visit the University of Michigan and the University of Connecticut for several months during 2015–16.

Photo courtesy of Christian Schnell.



Christian Schnell

Christian Schnell was born in Germany in 1979. He received his PhD from the Ohio State University in 2008 under the direction of Herb Clemens and held postdoctoral positions at the University of Illinois at Chicago, the Kavli Institute for the Physics and Mathematics of the Universe, and the University of Bonn. Since 2012 he has been an assistant professor at Stony Brook

University. Schnell's research is in the field of algebraic geometry and Hodge theory. He is interested in global properties of variations of Hodge structure, in the structure of D -modules on Abelian varieties, and, more broadly, in applications of Hodge theory to questions in algebraic geometry. He plans to use the fellowship to participate in a program about Hodge theory at the Simons Center for Geometry and Physics, to visit the École Polytechnique in Paris and the Research Institute for Mathematical Sciences in Kyoto, and to work with Claude Sabbah on a book about mixed Hodge modules.

Please note: Information about the competition for the 2016–17 AMS Centennial Fellowships will be published in the “Mathematics Opportunities” section of an upcoming issue of the *Notices*.

—Allyn Jackson

Barry Simon Awarded Bolyai Prize

BARRY SIMON of the California Institute of Technology has been awarded the 2015 International János Bolyai Prize in Mathematics for his 2005 book *Orthogonal Polynomials on the Unit Circle*. According to the prize citation, the book “is a monumental treatise that connects two important fields of mathematics: the theory of orthogonal polynomials and operator theory. This connected view has turned out to be extremely fertile in both areas, leading to applications in various directions from stochastic processes to theoretical physics. Barry Simon's monograph contains the classical theory, all the new developments, as well as many of their applications. The book became an instant success—a worthy successor [to] the Hungarian mathematician Gábor Szegő's classic treatise on orthogonal polynomials written in 1939.”

The Bolyai Prize is awarded every five years in recognition of internationally outstanding mathematics work. It carries a cash award of US\$25,000.

—From a Hungarian Academy of Sciences announcement

Stewart and Strogatz Receive Lewis Thomas Prize

IAN STEWART of Warwick University and STEVEN STROGATZ of Cornell University have been awarded the 2015 Lewis Thomas Prize for Writing about Science.

Ian Stewart is an active research mathematician with more than 180 published papers. He has published over eighty books, including *Mathematics of Life*, *Why Beauty Is Truth*, *What Shape Is a Snowflake?*, and *In Pursuit of the Unknown*. He is also coauthor of the bestselling series *The Science of Discworld I, II, III, and IV* and two science fiction novels, *Wheelers* and *Heaven*. Stewart's *Letters to a Young Mathematician* won the Peano Prize, and *The Symmetry Perspective* (written jointly with Martin Golubitsky) won the Ferran Sunyer i Balaguer Prize. A member of the Royal Society, he is also the recipient of the Royal Society's Faraday Medal, the Gold Medal of the Institute for

Mathematics and Its Applications, and the Public Understanding of Science Award from the American Association for the Advancement of Science.

Steven Strogatz is a renowned teacher and one of the world's most highly cited mathematicians. He has blogged about math for the *New York Times* and has been a frequent guest on RadioLab. He is the author of *Nonlinear Dynamics and Chaos*, *Sync*, *The Calculus of Friendship*, and *The Joy of x* . His honors include a Presidential Young Investigator Award; the E. M. Baker Award for Excellence in Undergraduate Teaching, the Massachusetts Institute of Technology's highest teaching prize; the Joint Policy Board for Mathematics Communications Award; the AAAS Public Engagement with Science Award; and membership in the American Academy of Arts and Sciences.

The Lewis Thomas Prize was established in 1993 by the trustees of Rockefeller University. The prize honors the rare individual who bridges the worlds of science and the humanities—whose voice and vision can tell us about science's aesthetic and philosophical dimensions, providing not merely new information but cause for reflection, even revelation. It was named after its first recipient, writer, educator, and physician-scientist Lewis Thomas, renowned author of *The Lives of a Cell*. Past recipients of the prize include Abraham Pais, Freeman Dyson, Steven Weinberg, and Martin Rees.

—From a Rockefeller University announcement

Fischer and Ruzhansky Awarded Sunyer Prize

VERONIQUE FISCHER and MICHAEL RUZHANSKY of Imperial College, London, have been awarded the 2014 Ferran Sunyer i Balaguer Prize for their monograph *Quantization on Nilpotent Lie Groups*. The prize citation reads: “The theory of quantization was initiated at the end of the 1920s in mathematical physics. The mathematical aspect of this theory concerned with the analysis of operators has been intensively developed during the past fifty years. Nowadays, it is widely accepted and used as a powerful tool to study different questions in the theory of partial differential equations. However, the settings of these studies have been mainly Euclidean and commutative in nature. This monograph presents the recent advances of the theories of quantization and pseudodifferential operators on compact and nilpotent Lie groups. It also contains applications to noncommutative global analysis and to partial differential equations, in particular on the Heisenberg group. The prize carries a cash award of 15,000 euros (approximately US\$16,000). It is awarded for a mathematical monograph of an expository nature presenting the latest developments in an active area of research in mathematics in which the recipient has made important contributions. The winning monograph will be published by Birkhäuser Verlag in the series Progress in Mathematics.

—From a Ferran Sunyer i Balaguer Foundation announcement

Megiddo Awarded von Neumann Prize

NIMROD MEGIDDO of the IBM Corporation Research Division has been awarded the 2014 John von Neumann Theory Prize, the highest prize given in the field of operations research and management science. According to the prize citation, he has had a “profound impact on the theory of linear programming. His work on the probabilistic analysis of the simplex method, alone and with Adler, established some of the most important results in the area, including the best (quadratic) bound for the complexity of a complete parametric pivoting method and an explanation of why this is possible for the lexicographic version but not the standard Lemke perturbation. He also established a quadratic lower bound for this method. This, along with work of Smale, Borgwardt, and Haimovich, together with independent proofs of the quadratic result by Adler-Karp-Shamir and Todd, provided the first theoretical justification for the success of the simplex method.” Megiddo has done important work in the theory of interior-point methods and algorithmic game theory and has studied the question of whether there is a strongly polynomial algorithm for linear programming. The von Neumann Prize carries a cash award of US\$5,000.

—From an INFORMS announcement

Prizes of the Canadian Mathematical Society

The Canadian Mathematical Society (CMS) has awarded a number of prizes for 2015.

DONG LI of the University of British Columbia has been awarded the Coxeter-James Prize for his work in mathematical fluid dynamics, nonlinear dispersive equations, and mathematical physics. The prize honors young mathematicians who have made outstanding contributions to mathematical research.

ALEJANDRO ADEM of the University of British Columbia has been awarded the Jeffery-Williams Prize for Research Excellence for his work in group cohomology and the geometry of group actions. According to the prize citation, he “is fascinated by the deep mathematics and beauty associated to symmetry groups, which manifest themselves both in nature and across a variety of scientific disciplines.” He is managing editor of both *Memoirs* and *Transactions of the AMS* and is a Fellow of the AMS. The prize is awarded to mathematicians who have made outstanding contributions to mathematical research.

JANE YE of the University of Victoria has been awarded the Krieger-Nelson Prize for her work in optimization, optimal control theory, and variational analysis and its application in economics, engineering, management science, operations research, and statistics. According to the prize citation, in her work as an applied mathematician, she develops powerful theoretical tools and designs algorithms to attack some complicated optimization questions. The

prize is awarded for outstanding research by a woman mathematician.

JAMIE MULHOLLAND of Simon Fraser University has been awarded the Excellence in Teaching Award for his innovative teaching techniques. According to the prize citation, he “records calculus lectures and combines these videos with other online and traditional teaching resources.... [His] approach to math education produces a student population that is more engaged, confident and successful.” In more advanced math courses, “he uses puzzles and hands-on activities to teach concepts in group theory and discrete mathematics.” He is currently a Senior Lecturer in the Department of Mathematics at SFU, where he balances his teaching responsibilities with researching teaching methodology and participating in the direction of undergraduate mathematics education. The prize recognizes sustained and distinguished contributions in teaching at the postsecondary undergraduate level at a Canadian institution.

—From CMS announcements

Pramanik Awarded Michler Prize

MALABIKA PRAMANIK of the University of British Columbia has been awarded the 2015–16 Ruth I. Michler Prize of the Association for Women in Mathematics (AWM). Pramanik was chosen for “her wide range of mathematical talent and the close connection of her work with the research of the analysis group at Cornell University.” Her research spans several areas, including Euclidean harmonic analysis, geometric measure theory, several complex variables, partial differential equations, and inverse problems. At Cornell she will be working with Camil Muscalu and Robert Strichartz, whose research in harmonic analysis, specifically the theory of multilinear singular integrals and convergence of Fourier series and spectral analysis of fractal sets, is of special interest to Pramanik in her work.

Pramanik received her PhD in mathematics from the University of California Berkeley in 2001 under the direction of F. Michael Christ. She has been a Fairchild Senior Research Fellow at the California Institute of Technology, a visiting assistant professor at the University of Rochester, and Van Vleck Assistant Professor at the University of Wisconsin–Madison before joining the University of British Columbia in 2006, where she is currently an associate professor in the Department of Mathematics. She is currently an adjunct visiting faculty member at the Centre for Applicable Mathematics of the Tata Institute of Fundamental Research in Bangalore, India.

The Michler Prize grants a midcareer woman in academia a residential fellowship in the Cornell University mathematics department without teaching obligations.

—From an AWM announcement

Allen Awarded Kovalevsky Lectureship

LINDA J. S. ALLEN of Texas Tech University has been chosen as the AWM-SIAM Sonia Kovalevsky Lecturer for 2015 by the Association for Women in Mathematics (AWM) and the Society for Industrial and Applied Mathematics (SIAM). She was honored “for her outstanding contributions in ordinary differential equations, difference equations, and stochastic models, which have significant applications in the areas of infectious diseases and ecology.” Her work has had a large impact in the fields of mathematical epidemiology and ecological modeling.

Allen received her PhD from the University of Tennessee in 1981 under the direction of T. G. Hallam. She joined the faculty at Texas Tech in 1985. In 2010 she was recognized with the Paul Whitfield Horn Professorship in Mathematics and Statistics, which she still holds. She also holds an adjunct professorship at the Institute of Environmental and Human Health at Texas Tech and has done research at the Mathematical Bioscience Institute of Ohio State University. She serves on the editorial boards of four prestigious journals and is the author of ninety research articles and two books. She will deliver the Kovalevsky Lecture, titled “Predicting population extinction, disease outbreaks, and species invasions using branching processes,” at the 2015 International Congress on Industrial and Applied Mathematics (ICIAM) in Beijing, China, in August 2015. The Sonia Kovalevsky Lectureship honors significant contributions by women to applied or computational mathematics.

—From an AWM-SIAM announcement

Hrimiuc Awarded PIMS Education Prize

DRAGOS HRIMIUC of the University of Alberta has been awarded the 2015 PIMS Education Prize of the Pacific Institute for the Mathematical Sciences (PIMS). In addition to receiving “outstanding assessments from students who praise both his dedication and ability to inspire in them a love and understanding of mathematics”, he is committed to mathematical outreach. He is the president of the Alberta High School Mathematics Competition (AHSMC), the first province-wide high school mathematics competition in Canada. He is also one of the founders of *Pi in the Sky*, a PIMS publication intended for high school teachers and their students, and is a regular contributor to the magazine, writing articles on problem-solving strategies, as well as editing the “Math Challenges” section.

The annual prize recognizes individuals in western Canada and Washington State who have played a major role in encouraging activities that enhance public awareness and appreciation of mathematics, as well as fostering communication among various groups concerned with mathematical education at all levels.

—From a PIMS announcement

Bohun Awarded CAIMS-Fields Prize

SEAN BOHUN of the University of Ontario Institute of Technology has been awarded the 2015 CAIMS-Fields Prize in Industrial Mathematics by the Fields Institute and the Canadian Applied and Industrial Mathematics Society (CAIMS) for “exciting and valuable insights into problems ranging from mineral processing to tissue engineering and scheduling,” which have led to “new theoretical developments in the theory of PDE models for thermoelasticity and free boundary problems.”

The CAIMS-Fields annual industrial mathematics prize is awarded to a researcher in recognition of exceptional research conducted primarily in Canada in any branch of industrial mathematics, interpreted broadly.

—From a Fields Institute press release

Curien and Miller Awarded Davidson Prize

NICOLAS CURIEN of Université Paris-Sud and JASON MILLER of the Massachusetts Institute of Technology have been awarded the 2015 Rollo Davidson Prize. Curien was honored for “outstanding work on random planar maps and related processes.” Miller was recognized for “far-reaching results on the geometry of the continuum Gaussian free field.”

The Rollo Davidson Trust was founded in 1975 and awards the annual prize to young mathematicians working in the field of probability.

—From a Rollo Davidson Trust announcement

Ramond Awarded Heineman Prize

PIERRE RAMOND of the University of Florida has been awarded the 2015 Dannie Heineman Prize in Mathematical Physics for his “pioneering foundational discoveries in supersymmetry and superstring theory, in particular the dual model of fermions and the theory of the Kalb-Ramond field.”

The Heineman Prize is awarded annually in recognition of outstanding publications in the field of mathematical physics. The prize consists of US\$10,000 and a certificate. It was established by the Heineman Foundation for Research, Educational, Charitable, and Scientific Purposes, Inc., and is administered jointly by the American Physical Society and the American Institute of Physics.

—From a Heineman Foundation announcement

Recht Receives Baker Award for Initiatives in Research

BENJAMIN RECHT of the University of California Berkeley has been awarded the William O. Baker Award for Initiatives in Research of the National Academy of Sciences (NAS), presented in 2015 in the field of statistics and machine learning. He was honored for “his significant contributions to the field of data science, an area of research that combines statistics (the analysis of large amounts of numerical data), computer science, and mathematics. His work has been particularly valuable in a broad area of mathematics that uses assumptions to reconstruct data-matrix completion and nuclear norm minimization.” The award recognizes innovative young scientists and encourages research likely to lead toward new capabilities for human benefit. It is to be given to a resident of the United States preferably no older than thirty-five years of age. The prize carries a cash award of US\$15,000.

—From an NAS announcement

2015 Guggenheim Fellowship Awards to Mathematical Scientists

The John Simon Guggenheim Memorial Foundation has announced the names of 175 scholars, artists, and scientists who were selected as Guggenheim Fellows for 2015. Selected as fellows in mathematics and applied mathematics were: EMERY N. BROWN, Harvard Medical School and Massachusetts Institute of Technology; MICHAEL DOEBEL, University of British Columbia; JORDAN S. ELLENBERG, University of Wisconsin-Madison, and TATIANA TORO, University of Washington. Guggenheim Fellows are appointed on the basis of impressive achievement in the past and exceptional promise for future accomplishment.

—From a Guggenheim Foundation announcement

Simons Fellows in Mathematics

The Simons Foundation Mathematics and Physical Sciences (MPS) division supports research in mathematics, theoretical physics, and theoretical computer science. The MPS division provides funding for individuals, institutions, and science infrastructure. The Fellows Program provides funds to faculty for up to a semester-long research leave from classroom teaching and administrative obligations. The mathematical scientists who have been awarded Simons Fellowships for 2015 are: ANTHONY BLOCH, University of Michigan; LILIANA BORCEA, University of Michigan; NIGEL BOSTON, University of Wisconsin-Madison; TED CHINBURG, University of Pennsylvania; OCTAV CORNEA, University of Montreal; HENRI DARMON, McGill University; LAURA DEMARCO, Northwestern University; TYRONE DUNCAN, University of Kansas; JOHN ETNYRE,

Georgia Institute of Technology; ALAN FRIEZE, Carnegie Mellon University; DENNIS GAITSGORY, Harvard University; ALLAN GREENLEAF, University of Rochester; DANIEL GROVES, University of Illinois at Chicago; SAMUEL GRUSHEVSKY, Stony Brook University; MARCO GUALTIERI, University of Toronto; YAN GUO, Brown University; ELENY IONEL, Stanford University; KREŠIMIR JOSIĆ, University of Houston; ROWAN KILLIP, University of California Los Angeles; SERGIU KLAINERMAN, Princeton University; NICOLAI KRYLOV, University of Minnesota; THOMAS LAM, University of Michigan; AARON LAUDA, University of Southern California; TAO LI, Boston College; HANS LINDBLAD, Johns Hopkins University; GUOZHEN LU, Wayne State University; MITCHELL LUSKIN, University of Minnesota–Twin Cities; ROBERT MCCANN, University of Toronto; CURTIS MCMULLEN, Harvard University; LENHARD NG, Duke University; MARTIN OLSSON, University of California Berkeley; BJORN POONEN, Massachusetts Institute of Technology; FLORIAN POP, University of Pennsylvania; MIHNEA POPA, Northwestern University; CRISTIAN POPESCU, University of California San Diego; NICOLAI RESHETIKHIN, University of California Berkeley; TIMO SEPPÄLÄINEN, University of Wisconsin–Madison; ALEXANDER VARCHENKO, University of North Carolina at Chapel Hill; W. HUGH WOODIN, Harvard University; and HONG-KUN ZHANG, University of Massachusetts, Amherst.

—From a Simons Foundation announcement

Putnam Prizes Awarded

The winners of the seventy-fifth William Lowell Putnam Mathematical Competition have been announced. The Putnam Competition is administered by the Mathematical Association of America (MAA) and consists of an examination containing mathematical problems that are designed to test both originality and technical competence. Prizes are awarded to both individuals and teams.

The six highest ranking individuals, listed in alphabetical order, were: RAVI JAGADEESAN, Harvard University; ZIPEI NIE, Massachusetts Institute of Technology; MARK A. SELLKE, Massachusetts Institute of Technology; BOBBY C. SHEN, Massachusetts Institute of Technology; DAVID H. YANG, Massachusetts Institute of Technology; and LINGFU ZHANG, Massachusetts Institute of Technology. Each received a cash award of US\$2,500.

Institutions with at least three registered participants obtain a team ranking in the competition based on the rankings of three designated individual participants. The five top-ranked teams (with members listed in alphabetical order) were: first place, Massachusetts Institute of Technology (MITCHELL M. LEE, ZIPEI NIE, DAVID H. YANG); Harvard University (CALVIN DENG, MALCOLM GRANVILLE, XIAOYU HE), Rensselaer Polytechnic Institute (THEERAWAT BHUDISAKSANG, OWEN GOFF, WIJIT YANGJIT); University of Waterloo (KANGNING CHEN, SAM EISENSTAT, DANIEL SPIVAK); Carnegie Mellon University (LINUS U. HAMILTON, THOMAS E. SWAYZE, SAMUEL ZBARSKY). The first-place team receives an award of US\$25,000, and each member of the team receives US\$1,000. The awards for second place are US\$20,000 and US\$800; for third place, US\$15,000 and

US\$600; for fourth place, US\$10,000 and US\$400; and for fifth place, US\$5,000 and US\$200.

—From an MAA announcement

Intel Science Talent Search Winners Announced

Three students whose work involves the mathematical sciences won first-, second-, and third-place scholarship awards in the 2015 Intel Science Talent Search. NOAH GOLOWICH, seventeen, of Lexington, Massachusetts, was awarded the First Place Medal of Distinction for Basic Research, which recognizes finalists who demonstrate exceptional scientific potential through depth of research and analysis. In his project, “Resolving a conjecture on degree of regularity, with some novel structural results,” he developed a proof in the area of Ramsey theory, a field of mathematics based on finding types of structure in large and complicated systems. He received a scholarship award of US\$150,000. BRICE HUANG, seventeen, of Princeton Junction, New Jersey, was awarded the Second Place Medal of Distinction for Basic Research and a scholarship award of US\$75,000. In his project, “Monomization of power ideals and generalized parking functions,” he extended previous mathematical research on power ideals-linear functions of variables raised to some power and was able to calculate the power ideal’s series of dimension for a larger class of ideals than has previously been possible. SHASHWAT KISHORE, eighteen, of West Chester, Pennsylvania, received the Third Place Medal of Distinction for Basic Research and a scholarship award of US\$35,000 for his math project, “Multiplicity space signatures and applications in tensor products of SL_2 representations,” which focused on representing abstract algebras using matrices. His work developed a new relationship between these matrices and topology. The Intel Science Talent Search is administered by the Society for Science and the Public (SSP).

—From an SSP announcement

NSF Graduate Research Fellowships Awarded

The National Science Foundation (NSF) has awarded a number of Graduate Research Fellowships for fiscal year 2015. Further awards may be announced later in the year. This program supports students pursuing doctoral study in all areas of science and engineering and provides a stipend of US\$30,000 per year for a maximum of three years of full-time graduate study. Following are the names of the awardees in the mathematical sciences selected so far in 2015, followed by their undergraduate institutions (in parentheses) and the institutions at which they plan to pursue graduate work.

LEONARDO ABBRESCIA (Columbia University), Columbia University; AMOL AGGARWAL (Massachusetts Institute of Technology), Massachusetts Institute of Technology; OLIVIA BECKWITH (Harvey Mudd College), Emory

University; CLAIRE MCKAY BOWEN (Idaho State University), University of Notre Dame; AMANDA BOWER (University of Michigan), University of Michigan, Ann Arbor; MADELINE BRANDT (Virginia Reed College), Reed College; DAVID J. BRUCE (University of Michigan, Ann Arbor), University of Wisconsin, Madison; KATHERINE E. CAI (Arizona State University), Arizona State University; ORSOLA CAPOVILLA-SEARLE (Bryn Mawr College), Bryn Mawr College; RYAN P. CAULFIELD (University of Delaware), University of Delaware; JULIAN C. CHAIDEZ (Massachusetts Institute of Technology), Massachusetts Institute of Technology; LORIN A. CRAWFORD (Clark Atlanta University), Duke University; MARICELA F. CRUZ (Pomona College), University of California Irvine; IRVING F. DAI (Harvard College), Princeton University; SHEELA DEVADAS (Massachusetts Institute of Technology), Massachusetts Institute of Technology; STEVEN M. DIAMOND (Stanford University), Stanford University; HANNAH M. DIRECTOR (University of Washington), Harvard University; STEPHANIE DODSON (University of Massachusetts, Amherst), Brown University; ALEXANDER J. DUNLAP (University of Chicago), University of Chicago; MITCHELL FAULK (University of Notre Dame), Columbia University; AGUSTIN FLORES (Northeastern Illinois University), William Marsh Rice University; JESSE B. FREEMAN (Williams College), Williams College; BENJAMIN G. GAMMAGE (University of Chicago), University of California Berkeley; XAVIER E. GARCIA (University of Minnesota, Twin Cities), Northwestern University; STEPHANIE KWANG-YU GER (Boston College), Northwestern University; GAUTAM C. GOEL (Georgia Institute of Technology), Georgia Institute of Technology; BENJAMIN Z. GREEN (Yale University), Harvard University; MARK J. GREENFIELD (California Institute of Technology), California Institute of Technology; SAMUEL F. HOPKINS (Reed College), Massachusetts Institute of Technology; EAMAN JAHANI (University of Michigan, Ann Arbor), Massachusetts Institute of Technology; WILLIAM B. JAMIESON (East Tennessee State University), University of Nebraska, Lincoln; RACHAEL T. KELLER (Louisiana State University Agricultural Center), Louisiana State University Agricultural Center; CARSON R. KENT (Colorado School of Mines), Colorado School of Mines; ANNA E. KIRKPATRICK (University of South Carolina, Columbia), University of South Carolina, Columbia; MICHAEL LANDRY (University of California Berkeley), Yale University; CALEB LAREAU (University of Tulsa), University of Tulsa; CARL F. LIAN (Massachusetts Institute of Technology), Massachusetts Institute of Technology; MARTIN L. LINDSEY (Massachusetts Institute of Technology), Stanford University; ERIN M. LINEBARGER (Eckerd College), University of Utah; MICHELLE D. MAIDEN (Meredith College), University of Colorado, Boulder; DEVLIN D. MALLORY (University of California Berkeley); MATTHEW B. McDERMOTT (Harvey Mudd College); SHAINA JOAN-ALEXANDRIA MITCHELL (Carnegie Mellon University), University of North Carolina, Chapel Hill; NISHANT NANGIA

(University of Illinois, Urbana-Champaign), Northwestern University; AMY L. NESKY (Boston College), University of Michigan, Ann Arbor; ALEX J. OCAMPO (University of Michigan, Ann Arbor), Harvard University; BERTRAND J. OTTINO-LOFFLER (California Institute of Technology), Cornell University; JOSHUA W. PFEFFER (Harvard University), Harvard University; ANTE QU (Princeton University), Princeton University; ARPON P. RAKSIT (Harvard University), Harvard University; NICOLAS Z. REYES (University of Massachusetts, Amherst), University of Texas, Austin; RYAN THORNGREN (California Institute of Technology), University of California Berkeley; SHREYAS S. TIKARE (University of North Carolina, Chapel Hill), Princeton University; BRANDON V. TRAN (Massachusetts Institute of Technology), Massachusetts Institute of Technology; DANIEL R. VITEK (Duke University), Princeton University; ABIGAIL R. WARD (University of Chicago), University of Chicago; RYAN S. WARNICK (Baylor University), William Marsh Rice University; ALLEN YUAN (Harvard University), Harvard University.

—From an NSF announcement

SIAM Fellows Elected

The Society for Industrial and Applied Mathematics (SIAM) has elected thirty-one new fellows for 2015. Their names and institutions follow.

CHARU C. AGGARWAL, IBM T. J. Watson Research Center; ANN S. ALMGREN, Lawrence Berkeley Laboratory; AHARON BEN-TAL, Technion-Israel Institute of Technology; VINCENT D. BLONDEL, Université Catholique de Louvain; STEPHEN P. BOYD, Stanford University; FRED BRAUER, University of British Columbia, University of Wisconsin, Madison; FRANCO BREZZI, Istituto Universitario di Studi Superiori di Pavia; TYRONE E. DUNCAN, University of Kansas; CHARLES M. ELLIOTT, University of Warwick; FAN CHUNG GRAHAM, University of California San Diego; ANNE GREENBAUM, University of Washington; WILLIAM W. HAGER, University of Florida; PER CHRISTIAN HANSEN, Technical University of Denmark; TAMARA G. KOLDA, Sandia National Laboratories; PETROS KOUMOUTSAKOS, ETH Zurich; MIROSLAV KRSTIC, University of California San Diego; RACHEL KUSKE, University of British Columbia; CHARLES E. LEISERSON, Massachusetts Institute of Technology; QUN LIN, Chinese Academy of Sciences; ESMOND G. NG, Lawrence Berkeley National Laboratory; HINKE M. OSINGA, University of Auckland; CHRISTOPHER C. PAIGE, McGill University; RODOLPHE SEPULCHRE, University of Cambridge; HALIL METE SONER, ETH Zurich; PANAGIOTIS E. SOUGANIDIS, University of Chicago; PING TAK PETER TANG, Intel Corporation; MOSHE Y. VARDI, Rice University; CHARLES W. WAMPLER, General Motors Company; CLARENCE E. WAYNE, Boston University; HENRY WOLKOWICZ, University of Waterloo; and GANG GEORGE YIN, Wayne State University.

—From a SIAM announcement

Samuel Gitler (1933–2014)

Samuel Gitler was born on July 14, 1933, in Mexico City, soon after his parents emigrated from Poland, fleeing from the Nazi regime. At the age of twelve, he was sent by his father to San Antonio, Texas, to attend junior high school, where his mathematical skills quickly impressed his teachers. He returned to attend high school in Mexico in 1947 at the prestigious Escuela Nacional Preparatoria of the National University of Mexico (UNAM). Later, in 1952, he enrolled in UNAM's Escuela Nacional de Ingenieros, graduating in 1956 with two BSc degrees, one in engineering and another in mathematics. Motivated by Solomon Lefschetz, a regular visitor to Mexico starting in 1944, Samuel enrolled in Princeton's PhD program under the supervision of Norman Steenrod. Samuel graduated in January 1960 and got a postdoctoral position at Brandeis University, where he first met Edgar H. Brown. In 1961, Samuel returned to Mexico to found, together with José Ádem, a Mathematics Department at Cinvestav. Under their joint leadership, this research center quickly gained a world-class reputation, thus establishing the basis of the modern Mexican school in algebraic topology.

Samuel started a brilliant mathematical career by attacking with extraordinary success the Euclidean immersion problem for real projective spaces. His joint work with Ádem and Mahowald initiated an authentic explosion of new results in the field. They quickly established three of the seven optimal families of immersions known to date for those manifolds. During the first decade of accomplishments, Samuel was also interested in the topology of projective Stiefel manifolds due to their role in the immersion problem. His results on the subject led to two very influential papers: one published in *Topology* in 1968, and then another published in 1986 in his beloved *Mexican Bulletin*, where the parallelizability properties of those manifolds are settled with a single exception. These ideas launched a flurry of results around the vector field problem for projective Stiefel manifolds.

The end of the fruitful first decade of activities witnessed the development by Gitler and Mahowald of a modified version of the Moore-Postnikov method of decomposing a fibration in terms of the homotopy groups of the fiber. As in Adams's work on the unitary Hopf invariant, the new approach utilized homological algebra to filter the homotopy groups of the fiber. This resulted in a highly manageable technique to compute higher order cohomology operations.

The ground was thus prepared in the early 1970s for a seminal collaboration of Samuel and Edgar Brown: the construction of the Brown-Gitler spectra, objects that became a fundamental tool in modern homotopy theory. Not only were these spectra crucial in Ralph Cohen's argument in 1985 for proving the immersion conjecture for manifolds, but they have played an important role in many of the most spectacular developments of homotopy theory. The most representative examples are Mahowald's counterexample in the 1970s to the Doodmsday Conjecture, in which he constructed an infinite family of Adams filtration 2 elements in the cohomology of the Steenrod algebra that detect nontrivial elements in the stable homotopy groups

of spheres, and Haynes Miller's solution of the Sullivan Conjecture, one of the most significant problems in homotopy theory during the 1980s dealing with the homotopy possibilities for mapping the classifying space of a finite group into a finite complex. The Brown-Gitler work was cited in George W. Whitehead's historical survey of the one hundred most relevant papers in homotopy theory up to 1980, featuring the Brown-Gitler paper as one of the high points of homotopy theory. Indeed, Brown-Gitler spectra were popping up as basic building blocks of classical spaces and, in 1985, the AMS organized a symposium on that subject.

Throughout his mathematical life, Samuel always maintained a wide range of mathematical interests. He worked on the generalized vector first problem, the homotopy classification of stunted projective spaces, supermanifolds, the Riemann-Hurwitz formula, configuration spaces and, near the end of his career, toric topology. He showed an incredible intuition that always resulted in the finest mathematics due to a tireless attitude toward work and an extraordinary ability to go right to the essence of the problem under consideration.

Samuel had a wise vision to create leading research groups. While he was the chairman of the Rochester mathematics department, Doug Ravenel and Fred Cohen joined the faculty, thus consolidating one of the world's leading groups in homotopy theory.

Samuel received many prizes and honors; in particular, he received the National Prize of Science from the hands of the Mexican president in 1976; he was president of the Mexican Mathematical Society for the period 1967–1969, an Inaugural Fellow of the AMS (2012) and, since 1986, a member of El Colegio Nacional, an elite institution grouping the most distinguished artists, scientists, and writers of Mexico.

Samuel died on September 9, 2014, at the age of 81, leaving a rich legacy in the field of algebraic topology.

—Jesus Gonzalez
Center for Research
and Advanced Studies of the National
Polytechnic Institute
(CINVESTAV-IPN) Mexico