
Mathematics People

MacPherson Awarded Hopf Prize

ROBERT MACPHERSON of the Institute for Advanced Study has been chosen the first winner of the Heinz Hopf Prize given by ETH Zurich for outstanding scientific work in the field of pure mathematics. MacPherson, a leading expert in singularities, delivered the Heinz Hopf Lectures, titled “How Nature Tiles Space”, in October 2009. The prize also carries a cash award of 30,000 Swiss francs, approximately equal to US\$30,000.

The following quotation was taken from a tribute to MacPherson by Gisbert Wüstholz of ETH Zurich: “Singularities can be studied in different ways using analysis, or you can regard them as geometric phenomena. For the latter, their study demands a deep geometric intuition and profound geometric insight; this is what MacPherson masters in a most striking and extremely artful way. He combines geometric visions with algebraic rigidity. If you study his work you see that it is glowing with elegance and profound in its depth.

“He consistently was ahead of his time, developing new ideas and new approaches—ones often not shaped by the main streams of mathematical thought of the day, but rather characterized by great vision. Repeatedly the mathematical community came to embrace, extend, and apply his ideas and results as they caught up with that vision.

“MacPherson’s connections with the Swiss mathematical community date back to 1983, when he participated in and significantly contributed to the famous Borel seminar, a joint seminar organized by several Swiss universities, including ETH Zurich, Lausanne, Geneva, Bern, and Basel. The seminar was initiated by Armand Borel, one of the most distinguished Swiss mathematicians of the last century. The topic of the seminar was the Goresky-MacPherson intersection homology and its use for the cohomology of arithmetic groups, one of the main research areas of Armand Borel.

“This illustrates only a small part of the work of MacPherson, for it spans a wide spectrum of contributions in many very different areas: algebraic geometry and topology; algebraic groups, group actions, and representation theory; enumerative geometry and combinatorics; locally

symmetric spaces, L^2 -cohomology, arithmetic groups, and the Langlands program. The list is by far not complete, and we try only to give a representative selection of his contribution to mathematics. He influenced a whole generation of mathematicians by giving them new tools to attack difficult problems and teaching them novel geometric, topological, and algebraic ways of thinking.”

Robert MacPherson was born in 1944 in Lakewood, Ohio. He received his B.A. from Swarthmore College in 1966 and his Ph.D. from Harvard University in 1970. He taught at Brown University from 1970 to 1987 and at the Massachusetts Institute of Technology from 1987 to 1994. He has been at the Institute for Advanced Study in Princeton since 1994. His work has introduced radically new approaches to the topology of singular spaces and promoted investigations across a great spectrum of mathematics. MacPherson works in several fields of geometry—topology, algebraic geometry, differential geometry, and singularity theory, and he is especially interested in aspects of geometry that interact with other areas of mathematics. In 1992 he received the National Academy of Sciences Award in Mathematics, and in 2002 he received the Leroy P. Steele Prize of the AMS.

The Heinz Hopf Prize at ETH Zurich was established through a donation made by Dorothee and Alfred Aeppli and will be awarded every two years for outstanding scientific work in the field of pure mathematics.

—From an ETH announcement

Lindenstrauss and Villani Awarded Fermat Prize

ELON LINDENSTRAUSS of Princeton University and CÉDRIC VILLANI of École Normale Supérieure de Lyon have been awarded the 2009 Fermat Prize by the Institut de Mathématiques de Toulouse. Lindenstrauss was honored for his contributions to ergodic theory and their applications in number theory. Villani was selected for his contributions to the theory of optimal transport and his studies of nonlinear evolution equations.

The Fermat Prize, given every two years, recognizes outstanding research in the fields in which Pierre de Fermat made significant contributions: statements of variational principles, foundations of probability and analytical geometry, and number theory. The prize is intended to reward research that is accessible to the greatest number of professional mathematicians within these fields.

The prize carries a cash award of €20,000 (approximately US\$29,700).

—*Elaine Kehoe*

Pujals Awarded TWAS Prize in Mathematics

ENRIQUE PUJALS of the Institute of Pure and Applied Mathematics (IMPA) in Rio de Janeiro, Brazil, has been named the winner of the 2009 TWAS Prize in mathematics, awarded by the Academy of Sciences for the Developing World (TWAS). He was honored for his contributions toward developing “a theory about robust dynamics and about the role of homoclinic bifurcation as a universal mechanism to describe the way to produce very rich and complex dynamics.” Pujals will receive a cash prize of US\$15,000 and will deliver a lecture at the academy’s general meeting in 2010.

—*From a TWAS announcement*

Dereich Receives 2009 Information-Based Complexity Young Researcher Award

STEFFEN DEREICH of the Technische Universität Berlin, Germany, has been awarded the Information-Based Complexity Award for 2009. The award is given every year for significant contributions to information-based complexity by a young researcher who has not reached his or her thirty-fifth birthday by September 30 of the year of the award. The prize consists of US\$1,000 and a plaque.

The award committee this year consisted of Dirk Nuyens, Katholieke Universiteit, Leuven; Andreas Neuenkirch, University of Frankfurt; Jan Vybiral, University of Jena; Joseph F. Traub, Columbia University; and Henryk Wozniakowski, Columbia University and University of Warsaw.

—*Joseph Traub, Columbia University*

NSF CAREER Awards Made

The Division of Mathematical Sciences (DMS) of the National Science Foundation (NSF) has honored twenty-nine mathematicians in fiscal year 2009 with Faculty Early Career Development (CAREER) awards. The NSF established the awards to support promising scientists,

mathematicians, and engineers who are committed to the integration of research and education. The grants provide funding of at least US\$400,000 over a five-year period. The 2009 CAREER grant awardees and the titles of their grant projects follow.

MIKLOS ABERT, University of Chicago, Asymptotic Invariants of Residually Finite Groups; RAFAIL ABRAMOV, University of Illinois, Chicago, Predicting Global Climate Change through Fluctuation-Dissipation: A Practical Computational Strategy for Complex Multiscale Dynamics; ORLY ALTER, University of Texas, Austin, Integrative and Comparative Tensor Algebra Models of DNA Microarray Data from Different Studies of the Cell Cycle; BENJAMIN BRUBAKER, Massachusetts Institute of Technology, Multiple Dirichlet Series, Automorphic Forms, and Combinatorial Representation Theory; FRANCESCO CALEGARI, Northwestern University, Arithmetic of Cohomological Automorphic Forms; GAUTAM CHINTA, City College, City University of New York, Multiple Dirichlet Series and Metaplectic Groups; TOMMASO DE FERNEX, University of Utah, Singularities in the Minimal Model Program and Birational Geometry; IOANA DUMITRIU, University of Washington, Synergistic Interactions between Numerical Linear Algebra and Stochastic Eigenanalysis (Random Matrix Theory); NOUREDDINE EL KAROUI, University of California Berkeley, Random Matrices and High-Dimensional Statistics; YONGTAO GUAN, Yale University, New Statistical Methods for Massive Spatial, Temporal, and Spatial-Temporal Processes; JEFFREY HUMPHERYS, Brigham Young University, Interdisciplinary Mentoring Program in Analysis, Computation, and Theory (IMPACT); MARTA LEWICKA, University of Minnesota, Twin Cities, Thin Shells: Problems in Nonlinear Elasticity and Fluid Dynamics; FENGYAN LI, Rensselaer Polytechnic Institute, Development and Applications of Discontinuous Galerkin Methods; DI LIU, Michigan State University, Modeling, Analysis, and Computation of Stochastic Intracellular Reactions; GREGORY LYNG, University of Wyoming, Behavior of Solutions of Nonlinear Partial Differential Equations; MAURO MAGGIONI, Duke University, Multiscale Methods for High-Dimensional Data, Graphs, and Dynamical Systems; DIONISIOS MARGETIS, University of Maryland, College Park, Thermodynamic and Kinetic Approaches for Epitaxial Material Systems; LENHARD NG, Duke University, Symplectic Field Theory and Low-Dimensional Topology; JIAWANG NIE, University of California San Diego, Linear Matrix Inequality Representations in Optimization; DUANE NYKAMP, University of Minnesota, Twin Cities, Toward a Second-Order Description of Neuronal Networks; JEFFREY SCHENKER, Michigan State University, Analysis of Disordered Systems; JIAN SONG, Rutgers University, Canonical Metrics, Complex Monge-Ampère Equations, and Geometric Flows; JASON STARR, State University of New York, Stony Brook, Higher Rational Connectedness, Higher Fano Manifolds, and Applications; KATRIN WEHRHEIM, Massachusetts Institute of Technology, The Symplectic Category, Floer Field Theory, and Relations to Gauge Theory and Topology; ANNA WIENHARD, Princeton University, Higher Teichmüller Theory; LEXING YING, University of Texas, Austin, Fast Algorithms for Oscillatory Integrals; MING YUAN, Georgia

Institute of Technology, Sparse Modeling and Estimation with High-Dimensional Data; ALEKSEY ZINGER, State University of New York, Stony Brook, Holomorphic Curves in Algebraic Geometry and Symplectic Topology; and HUI ZOU, University of Minnesota, Twin Cities, New Statistical Methodology and Theory for Mining High-Dimensional Data.

—Elaine Kehoe

Memories of Eddie Nussbaum

A. EDWARD (EDDIE) NUSSBAUM died of congestive heart failure on October 31, 2009, at the age of eighty-four. He was a faculty member in the Department of Mathematics at Washington University in St. Louis for thirty-seven years.

Eddie Nussbaum was born in 1925 in the region Moench-Gladbach-Rheydt (three adjacent towns), Germany, where his parents operated a department store. His elder brother was arrested on Kristallnacht in 1938. Soon thereafter, Eddie and his sister were sent by the Kindertransport train to live in Belgium. However, conditions in Belgium were not safe, and Eddie and his sister were soon separated. Eddie fled to southern France, and when conditions there also became unsafe, he crossed into Switzerland with the help of two local women and their woodsman father. When he was quickly put in jail by the Swiss authorities, he invented a story that led to his release, and he lived for several years with a spinster and her nephew in Switzerland while studying mathematics at the University of Zurich. Although Eddie's sister also survived the Holocaust, sadly both his parents and his elder brother died in the Nazi death camp at Auschwitz.

In 1947 Eddie arrived penniless in New York and began taking courses at Brooklyn College while supporting himself by rolling clay tennis courts. Soon thereafter he was admitted to Columbia University for graduate studies in mathematics, receiving his M.A. from Columbia in 1950. The high regard in which he was held by the Columbia mathematics department is attested to by his appointment as a lecturer for the academic year 1951–52. For 1952–53 he was a staff member of the electronic computer project headed by John von Neumann at the Institute for Advanced Study in Princeton. After serving as an instructor at the University of Connecticut (1953–55) and an instructor at Rensselaer Polytechnic Institute (1955–57), he received his Ph.D. from Columbia in 1957 with a dissertation titled “The Hausdorff-Bernstein-Widder Theorem for Semigroups in Locally Compact Abelian Groups”. Following a year of service as an assistant professor at RPI, he was appointed assistant professor of mathematics at Washington University in 1958; he was quickly promoted to associate professor in 1961 and to full professor in 1965.

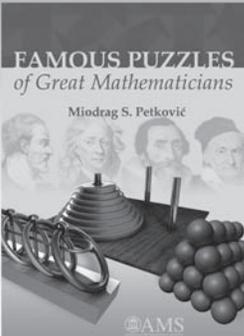
In 1955 Eddie, with Allen Devinatz and John von Neumann, coauthored a paper published by the *Annals of Mathematics* titled “On the permutability of self-adjoint operators”. This led to a distinguished career in functional analysis, with numerous important papers on unbounded operators on Hilbert spaces and on a variety of related

topics. His lectures were regarded by students and faculty as a model of mathematical clarity and precision. Both within the mathematics department and among his circle of friends and relatives, he was considered to be a kind, gentle, and compassionate man. Although he suffered a serious heart attack in 1979, he made a remarkable recovery, aided by an intensive rehabilitation and exercise program that led to his becoming an avid runner; indeed, he won a medal in a 1983 race. He retired from Washington University in 1995.

In 1989 Eddie and his wife visited his hometown of Rheydt in the Moench-Gladbach-Rheydt region and were very well received there; remarkably, he said he harbored no bitterness over his family's experiences. He is survived by Anne, his wife of fifty-two years, and their children Karl, who teaches film studies at Montclair State University and has produced a number of films, and Franziska, who works with photographers and serves as a stylist for advertising agencies in the St. Louis area.

—Guido Weiss and Edward Wilson, Washington University

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