Mathematics People

Darmon Awarded 2017 CRM-Fields-PIMS Prize

Henri Darmon

HENRI DARMON of McGill University has been awarded the 2017 CRM-Fields-PIMS Prize. The prize citation reads: "Professor Darmon is one of the leading number theorists of his generation. He has an extraordinary record of deep and highly influential contributions to the arithmetic theory of elliptic curves, including his recent breakthrough on the Birch and Swinnerton-Dyer Conjecture. He has also been an exceptional mentor to students and an exemplary citizen of the mathematical community." Darmon received his PhD in mathematics from Harvard University in 1991 under the supervision of Benedict Gross. He received the 1998 Coxeter-James Prize of the Canadian Mathematical Society, the 2008 John L. Synge Award of the Royal Society of Canada, and the 2017 Cole Prize in Number Theory of the AMS. For the AMS he gave invited lectures at the annual joint meetings in Orlando (1996) and San Antonio (2015), and he wrote an article on "Andrew Wiles's Marvelous Proof" for the March 2017 *Notices*. He is a member of the Royal Society of Canada.

—From a CRM-Fields-PIMS announcement

PECASE Awards Announced

Emily Fox

Two young researchers who work in the mathematical sciences have received Presidential Early Career Awards for Scientists and Engineers (PECASE). PECASE is the US government's highest award for scientists and engineers in the early stages of their research careers and who show the potential for exceptional leadership.

EMILY FOX of the University of Washington was honored for her "groundbreaking work in large-scale Bayesian modeling and computational approaches to time series and longitudinal data analysis...and for outstanding outreach and mentoring of women in computer science and statistics."

JACOB FOX of Stanford University was honored "for his work on extending the regularity method to sparse graphs and hypergraphs...and for taking a leadership role in the combinatorics community, mentoring high school students in the MIT PRIMES activity, training graduate students and serving as adviser for MIT undergraduate students."

—From a White House announcement

Sacks Prizes Awarded

Omer Ben-Neria

Martino Lupini

The Association for Symbolic Logic (ASL) has awarded the Gerald Sacks Prize for 2015 to OMER BEN-NERIA of the University of California Los Angeles and MARTINO LUPINI of the California Institute of Technology. Ben-Neria was honored for his thesis "The Possible Structure of the Mitchell Order," in which he "proved the remarkable result that, under suitable large cardinal assumptions on the cardinal κ, every well-founded partial order of cardinality κ can be realized as the Mitchell order of κ in some forcing extension. The Prizes and Awards Committee noted that the proof is a tour de force combination of sophisticated forcing techniques with the methods of inner model theory." Lupini was honored for his thesis "Operator Algebras and Abstract Classification," which "includes a beautiful result establishing a fundamental dichotomy in the classification problem for the automorphisms of a separable unital C^*-algebra up to unitary equivalence, as well as a proof that the Gurarij operator space is unique, homogeneous, and universal among separable 1-exact operator spaces. The Prizes and Awards Committee noted that his thesis exhibits a high

level of originality, as well as technical sophistication, in a broad spectrum of areas of logic and operator algebras." Lupini tells the *Notices*: "I would like to have a pet capybara, but I do not own a swamp. Some people mistake me for a panda." The Sacks Prize is awarded for the most outstanding doctoral dissertation in mathematical logic.

—From an ASL announcement

Charles L. Epstein and François Trèves Receive Bergman Prize

Charles L. Epstein

François Trèves

CHARLES L. EPSTEIN of the University of Pennsylvania and FRANÇOIS TRÈVES of Rutgers University have received the 2016 Bergman Prize. Established in 1988, the prize recognizes mathematical accomplishments in the areas of research in which Stefan Bergman worked. Epstein and Trèves will each receive US$12,000, which is one-half of the 2016 income from the Stefan Bergman Trust.

Citation: Epstein

Charles L. Epstein is awarded the Bergman Prize for his fundamental contributions to the theory of embeddability and stability of 3-dimensional Cauchy-Riemann (CR) structures. His extended series of papers on this subject includes his important early work with Burns in the 1980s, including their introduction of what is now called the Burns-Epstein invariant, his deep work on a relative index on the space of embeddable CR structures, his remarkable results with Henkin on the delicate structure of embeddable deformations of embeddable 3-dimensional CR structures, as well as his many other papers on the subject, on his own and with other collaborators. His other outstanding accomplishments include his incisive results on subelliptic boundary problems for $\text{Spin}_{\mathbb{C}}$-Dirac operators, leading to a proof of the Atiyah-Weinstein conjecture. Finally, Epstein is commended for the extensive range of his work in many parts of mathematical analysis.

Biographical Sketch: Epstein

Charles L. Epstein received his SB in mathematics from the Massachusetts Institute of Technology in 1978 and his PhD from New York University in 1983. Peter D. Lax directed his PhD thesis, "Geometrically Periodic Hyperbolic 3-Manifolds," which won the K. O. Friedrichs Prize of the Courant Institute. Epstein was then a National Science Foundation postdoctoral fellow and instructor at Princeton University; his postdoctoral mentor was William P. Thurston. While at Princeton, J. J. Kohn and a remarkable group of junior faculty colleagues and visitors (all of whom went on to win the Bergman Prize) introduced Epstein to the subject of several complex variables. In 1985, he joined the faculty at the University of Pennsylvania, where he currently holds the Thomas A. Scott Chair in Mathematics. He has held visiting appointments at the Universität Göttingen, the Institut des Hautes Études Scientifiques in Bures-sur-Yvette, the Eidgenössisches Technische Hochschule in Zurich, Universität Bern, Université Paris VI, the Institute for Advanced Study in Princeton, the Department of Radiology at the Hospital of the University of Pennsylvania, and New York University. He would like to acknowledge the important contributions of his collaborators—Daniel M. Burns Jr., John Bland, Richard Melrose, and Gennadi M. Henkin, as well as his friend László Lempert—to the work for which he has been awarded the Bergman Prize.

Epstein has also worked in spectral theory, hyperbolic geometry, univalent function theory, microlocal analysis, and index theory. For more than a decade, he has worked on a range of problems in medical imaging, image analysis, computational electro-magnetics, numerical analysis, and population genetics. In 2007 he founded the Graduate Group in Applied Mathematics and Computational Science at the University of Pennsylvania, which he continues to chair. He was a Sloan Foundation Fellow in 1988–1990. He is a Fellow of the AMS and the American Association for the Advancement of Science and serves on the Scientific Advisory Boards of the Math-Physics Division of the Simons Foundation in New York and of Brown University's Institute for Computational and Experimental Research in Mathematics. He and his wife Jane have two children.

Citation: Trèves

François Trèves is awarded the Bergman Prize for his many fundamental contributions to several complex variables and partial differential equations. This includes his work on the analytic hypoellipticity of pseudodifferential operators with double characteristics, which implies the analytic hypoellipticity of the Bergman projection on real analytic strictly pseudoconvex domains (the latter result was also proved independently by David Tartakoff using different methods). That in turn has had many applications to function theory in several complex variables. Both alone and in collaboration with Boutet de Monvel, Trèves proved many other pivotal results about C^∞ and analytic hypoellipticity of differential and pseudodifferential operators. The Baouendi-Trèves Approximation Theorem has had enormous impact on Cauchy-Reimann (CR) geometry. One consequence is the identification of the submanifolds on which CR functions are determined, which resolves a fundamental uniqueness question; another significant application is to the CR extension problem, which is a crucial ingredient in the determination of the local hull of holomorphy of a given CR submanifold. In a seminal work, with many far-reaching new ideas, Baouendi, Jacobowitz, and Trèves proved the real-analyticity of CR

diffeomorphisms between real analytic CR manifolds under very general hypotheses. Together, Nirenberg and Trèves made groundbreaking contributions to the theory of local solvability of linear partial differential operators. Their work inspired a long stream of research by many of the most prominent mathematicians in the subject, leading eventually to Dencker's resolution of the Nirenberg-Trèves "Condition ψ conjecture."

Trèves is the author of several important and extensively used monographs. His insights continue to influence the research of many mathematicians.

Biographical Sketch: Trèves

François Trèves was born in Brussels, Belgium, in 1930, to Italian parents. He is an Italian citizen and became a US citizen in 1972. He did his graduate studies at Université Paris IV-Sorbonne, writing his thesis under the supervision of Laurent Schwartz. Trèves received the Doctorat d'Étatés Sciences degree in 1958.

Not being a French citizen, he could not at that time get a position in France. He came to the United States and was an assistant professor at the University of California Berkeley (1958–1960), an associate professor at Yeshiva University (1960–1963), and a professor at Purdue University (1964–1965 and 1967–1969). During 1965–1967, he was a lecturer at the Sorbonne. In 1970, he became a professor at Rutgers University, where he held the Robert Adrain Chair of Mathematics from 1984 until his retirement in 2005.

Trèves held a Sloan Fellowship during 1960–1964. He received the 1972 Chauvenet Prize of the Mathematical Association of America for his article "On local solvability of linear partial differential equations," which appeared in the *Bulletin of the AMS* in 1970. In 1991, he received the AMS Leroy P. Steele Prize for Mathematical Exposition for his two-volume work *Pseudodifferential and Fourier Integral Operators* (Plenum Press, 1980). He received the *Laurea Specialistica Honoris Causa* from the University of Pisa in 2004. He is Fellow of the AMS and a foreign member of the Brazilian Academy of Sciences.

Trèves has collected butterflies across the tropics and is currently writing his eighteenth book about mathematical analysis.

About the Prize

The Bergman Prize honors the memory of Stefan Bergman, best known for his research in several complex variables, as well as the Bergman projection and the Bergman kernel function that bear his name. A native of Poland, he taught at Stanford University for many years and died in 1977 at the age of eighty-two. He was an AMS member for thirty-five years. When his wife died, the terms of her will stipulated that funds should go toward a special prize in her husband's honor.

The AMS was asked by Wells Fargo Bank of California, the managers of the Bergman Trust, to assemble a committee to select recipients of the prize. In addition the Society assisted Wells Fargo in interpreting the terms of the will to assure sufficient breadth in the mathematical areas in which the prize may be given. Awards are made every one or two years in the following areas: (1) the theory of the kernel function and its applications in real and complex analysis; and (2) function-theoretic methods in the theory of partial differential equations of elliptic type with attention to Bergman's operator method.

The previous Bergman Prize winners are:
- David W. Catlin (1989)
- Steven R. Bell and Ewa Ligocka (1991)
- Charles Fefferman (1992)
- Yum Tong Siu (1993)
- John Erik Fornæss (1994)
- Harold P. Boas and Emil J. Straube (1995)
- David E. Barrett and Michael Christ (1997)
- John P. D'Angelo (1999)
- Masatake Kuranishi (2000)
- László Lempert and Sidney Webster (2001)
- M. Salah Baouendi and Linda Preiss Rothschild (2003)
- Joseph J. Kohn (2004)
- Elias M. Stein (2005)
- Kengo Hirachi (2006)
- Alexander Nagel and Stephen Wainger (2007–2008)
- Ngaiming Mok and Duong H. Phong (2009)
- Gennadi Henkin (2011)
- David Jerison and John M. Lee (2012)
- Xiaojun Huang and Steve Zelditch (2013)
- Sławomir Kołdziej and Takeo Ohsawa (2014).
- Eric D. Bedford and Jean-Pierre Demailly (2015).

On the selection committee for the 2016 prize were:
- Xiaojun Huang
- Rafe Mazzeo (Chair)
- Anna Mazzucato.

—Allyn Jackson