Mathematics People

Quastel Awarded 2018 CRM-Fields-PIMS Prize

Jeremy Quastel

JEREMY QUASTEL of the University of Toronto has been awarded the 2018 CRM-Fields-PIMS Prize. According to the prize citation, Quastel was recognized "for a series of groundbreaking works during the last ten years related to the Kardar-Parisi-Zhang (KPZ) equation and the wider class of random growth models conjectured to share the same longtime, large-scale limit (the so-called KPZ universality class). He proved a twenty-five-year-old conjecture from physics about the scaling exponents for the KPZ equation, as well as computing an exact formula for its one-point distribution. He demonstrated that the KPZ equation is universal in that it arises as a scaling limit of a wide variety of nonlinear stochastic partial differential equations of Hamilton-Jacobi type. Most recently, he constructed and computed transition probabilities for the 'KPZ fixed point' Markov process, which should be the universal long-time limit of all models in the KPZ universality class. Among his earlier contributions, Quastel derived the incompressible Navier-Stokes equation from a class of interacting particle systems, derived equations for the behaviour of the internal diffusion-limited-aggregation model, and proved a conjecture about the speed of the traveling front for the stochastic Fisher-Kolmogorov-Petrovsky-Piskunov equation, which models branching diffusion processes."

Quastel received his PhD from the Courant Institute of Mathematical Sciences, New York University, in 1990 under the direction of S.R.S. Varadhan. He was a postdoctoral fellow at the Mathematical Sciences Research Institute in Berkeley, then served on the faculty at the University of California Davis before taking his present position at the University of Toronto in 1998. He was an Alfred P. Sloan Foundation Fellow from 1996 to 1998. He was awarded a Killam Research Fellowship in 2013 and delivered an invited address at the 2010 International Congress of Mathematicians in Hyderabad, India. He was elected a Fellow of the Royal Society of Canada in 2016. Outside of mathematics, he enjoys back-country canoe trips in Ontario with his family.

—From a Fields Institute announcement

Dancer Awarded Schauder Prize

E. Norman Dancer

E. NORMAN DANCER of the University of Sydney has been awarded the 2017 Juliusz Schauder Prize "in recognition of his outstanding contributions to the theory of nonlinear analysis, differential equations and applications." The prize is awarded to individuals for their significant achievements related to topological methods in nonlinear analysis. The prize citation reads: "Professor Norman Dancer is an eminent expert of world renown in the field of nonlinear mathematical and functional analysis and the theory of ordinary and partial differential equations. He has authored numerous groundbreaking papers published in the leading mathematical journals. The results of his studies concerning nonlinear differential equations, topological degree, Conley index, global bifurcation, equivariant topology and infinite-dimensional dynamical systems constitute the seminal contribution in modern mathematics. Moreover Professor Dancer's findings open new areas of knowledge and horizons of mathematical research. Difficult problems resolved by him often find deep motivations and applications in different branches of science as, for example, physics or biology."

Norman Dancer received his PhD from the University of Cambridge under the direction of Frank Smithies in 1972. He is a Fellow of the Australian Academy of Science and a recipient of the Hannan Medal of the Australian Academy of Science in 2009 for his research in pure mathematics. Dancer tells the *Notices*: "I did all my primary school education in small rural schools in the far north of Australia. I am also a keen hiker."

—From a Schauder Prize announcement

Johnson and Patey Awarded Sacks Prizes

Will Johnson

Ludovic Patey

The Association for Symbolic Logic has awarded the Gerald Sacks Prizes for 2016 to WILL JOHNSON of Niantic, Inc., and LUDOVIC PATEY of the Université Paris VII. Will Johnson received his PhD in 2016 from the University of California, Berkeley under the supervision of Tom Scanlon. He was honored for his thesis "Fun with Fields," which contains a number of outstanding results in the model theory of fields, including the classification of the fields K whose theories have the property of "dp-minimality," a strong form of "not the independence property." The Prizes and Awards Committee noted that Johnson's "main breakthrough is the construction of a definable topology on K, when K is not algebraically closed, introducing vastly new ideas and techniques into the subject." Johnson, a software engineer, tells the *Notices*: "My current job is to stop people from cheating in the games *Ingress, Pokemon GO*, and *Harry Potter: Wizards Unite.*"

Ludovic Patey received his PhD in 2016 from the Université Paris VII under the supervision of Laurent Bienvenu and Hugo Herbelin. He was honored for his thesis "The Reverse Mathematics of Ramsey-Type Theorems," in which he solved a large number of problems in the reverse-mathematical and computability-theoretic analysis of combinatorial principles. The Prizes and Awards Committee noted that "in doing so, he combined great technical ability with a powerful eye for unification, isolating several notions that have helped systematize the area." Patey tells the *Notices*: "I grew up in a family of six children, all of whom played music (three violin, one alto, one cello, one flute), and we made some family concerts of classical music in the countryside of France."

The Sacks Prize is awarded annually for the most outstanding doctoral dissertation in mathematical logic.

—From an ASL announcement

Bergman Prize Awarded to Berndtsson and Sibony

BO BERNDTSSON of Chalmers University and the University of Gothenburg, Sweden, and NESSIM SIBONY of Université Paris-Sud Orsay have been awarded the 2017 Bergman Prize. Established in 1988, the prize recognizes mathematical accomplishments in the areas of research in which Stefan Bergman worked. Berndtsson and Sibony will each receive US$12,000, which is one-half of the 2017 income from the Stefan Bergman Trust.

Citation: Bo Berndtsson

Bo Berndtsson

Bo Berndtsson is awarded the Bergman Prize for his many fundamental contributions to several complex variables, complex potential theory, and complex geometry. He is especially being recognized for his important work on $\bar{\partial}$ and L^2-$\bar{\partial}$ techniques on Kähler manifolds, with innovative applications to the study of the space of Kähler metrics. In a series of works, he has established deep positivity results for vector bundles and singular metrics on Kähler manifolds using L^2-$\bar{\partial}$ techniques. With R. Berman, Berndtsson established a conjecture of X. Chen regarding convexity properties of the Mabuchi functional (K-Energy) on the space of Kähler metrics and used this to prove a general uniqueness result for extremal metrics. Berndtsson and collaborators (including R. Berman, P. Charpentier, M. Paun, J. Sjöstrand) have contributed significantly to our understanding of singular metrics, Bergman kernels, and their asymptotics. In joint work with N. Sibony, Berndtsson has also studied the $\bar{\partial}$-equation on a positive current and developed, among other things, Kodaira and Nakano-Hörmander theory for L^2-estimates in the setting of currents without a differentiable structure. Berndtsson's work has had broad and far-reaching impact on the theory of several complex variables and complex geometry.

Berndtsson received his PhD in 1977, under the direction of Tord Ganelius, from the University of Gothenburg. He was elected to the Royal Swedish Academy of Sciences in 2003. He received the Edlund Prize of the Royal Academy of Science in 1987 and the Göran Gustafsson Prize in 2003. He tells the *Notices*: "In my free time I like to read, relax in nature, and I have also an amateurish interest in the political aspects of economy."

NEWS

Nessim Sibony

Citation: Nessim Sibony

Nessim Sibony is awarded the Bergman Prize for his many fundamental contributions to several complex variables, complex potential theory, and complex dynamics. He is recognized for his influential work on the study of bounded holomorphic functions with various prescribed properties and construction of other very useful analytic objects on pseudoconvex domains. This includes his joint work with M. Hakim, which, together with the work of E. Low, provided a final solution of an outstanding open problem on the existence of inner functions over the unit ball. (A solution to this problem was also independently obtained by A. B. Aleksandrov.) He is recognized for important contributions to pluripotential theory. With B. Berndtsson, he studied the $\bar{\partial}$ equation on a positive current and developed, among other things, the Kodaira and Nakano-Hörmander theory on L^2-estimates in the setting of currents without a differentiable structure. With T. C. Dinh, he introduced a calculus for currents of arbitrary bi-degree that has had applications in complex dynamics and foliations. In the subject of complex dynamics of several variables and complex foliation theory, he has coauthored many foundational papers with B. Berndtsson, T. C. Dinh, and J. E. Fornaess. In particular, he proved, with his collaborators, that there are always invariant harmonic currents for foliations by Riemann surfaces possibly with singularities. The influence of Sibony on several complex variables has been broad and far-reaching.

Sibony received his PhD from the University of Paris-Sud in 1974. He has been professor at the university since 1981 and has been a senior member of the Institut Universitaire de France since 2009. He received the Vaillant Prize in 1985 and the Sophie Germain Prize in 2009 from the French Academy of Sciences and was an invited speaker at the International Congress of Mathematicians in Kyoto in 1990. He tells the *Notices*: "I was born in Marrakech in 1947. I grew up there in a large family with Jewish-Arabic dialect as a mother tongue. When I was seven, we moved to Paris, where I have lived since. At that time, it was much easier for immigrants to integrate into the French society. I am indebted to the French system for generously providing the support making this adventure possible."

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.

A list of the past recipients of the Bergman Prize can be found at `www.ams.org/profession/prizes-awards/pabrowse?purl=bergman-prize`.

The members of the selection committee for the 2017 Bergman Prize were:

- Peter Ebenfelt
- Xiaojun Huang (Chair)
- Anna L. Mazzucato

—Elaine Kehoe

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