Mathematics People

Gupta Awarded Ramanujan Prize


Neena Gupta

Neena Gupta of the Indian Statistical Institute was awarded the 2021 DST–ICTP–IMU Ramanujan Prize for young mathematicians in developing countries. She was honored for her "outstanding work in affine algebraic geometry and commutative algebra, in particular for her solution of the Zariski cancellation problem for affine spaces." According to the prize committee, her work "shows impressive algebraic skill and inventiveness."

Gupta received her PhD from the Indian Statistical Institute (ISI) in 2011. She was a visiting scientist at ISI Kolkata (2012–2014) and a visiting fellow at the Tata Institute of Fundamental Research (TIFR) Mumbai in 2012 before joining the faculty at ISI. She was honored with the 2014 Young Scientists Award of the Indian National Science Academy for her solution of the Zariski cancellation problem. Her honors also include the 2019 Shanti Swarup Bhatnagar Prize, the 2014 Ramanujan Prize of the University of Madras, the inaugural Professor A. K. Agarwal Award of the Indian Mathematical Society, and the B. M. Birla Science Prize in Mathematics (2017). Gupta tells the *Notices*: "I have been always supported by my family and teachers in my life. I owe a lot to them, especially my father and my PhD supervisor Professor Amartya K. Dutta. I am also grateful to my husband and my parents-in-law for supporting my dreams."

The DST–ICTP–IMU Ramanujan Prize is awarded to researchers from developing countries who are under the age of forty-five for outstanding research in a developing country in any branch of the mathematical sciences. The prize is administered by the Abdus Salam International Centre for Theoretical Physics (ICTP), the Department of Science and Technology (DST) of the Government of India, and the International Mathematical Union (IMU). It carries a cash award of US$15,000.

—From a DST–ICTP–IMU announcement

Bhatt Receives Clay Research Award


Bhargav Bhatt

Bhargav Bhatt of the University of Michigan has been named the recipient of the 2021 Clay Research Award of the Clay Mathematics Institute (CMI). He was recognized for "his groundbreaking achievements in commutative algebra, arithmetic algebraic geometry, and topology in the p-adic setting."

According to the prize citation, "his profound contributions include the development, in joint work with M. Morrow and P. Scholze, of a unified p-adic cohomology theory (prismatic cohomology) and, in joint work with J. Lurie, a p-adic Riemann–Hilbert functor. Striking applications of this work include Bhatt's resolution of long-standing problems in commutative algebra, in particular concerning the Cohen–Macaulay property and Kodaira vanishing up to finite covers. These results have in turn fueled startling progress on the minimal model program in mixed characteristic."

Bhatt received his PhD from Princeton University in 2010. He became a postdoctoral assistant professor at the University of Michigan in 2010 and was a member of the Institute for Advanced Study from 2012 to 2014. He is currently Frederick W. and Lois B. Gehring Professor at Michigan. His honors include a Packard Fellowship (2015–2021), the Compositio Prize (2016), a Simons Investigator Award (2019–2024), and a New Horizons Prize in Mathematics (2021). He will be a plenary speaker at the International Congress of Mathematicians in St. Petersburg in 2022. He is a Fellow of the AMS.

—From a CMI announcement

NEWS

Kayal Awarded Infosys Prize

Neeraj Kayal of Microsoft Research Lab in Bangalore, India, has been awarded the 2021 Infosys Prize in Mathematical Sciences for his outstanding contributions to computational complexity. According to the prize announcement, his "extensive, innovative work on algebraic computation includes the development of deep lower bound techniques proving limitations of this natural model, as well as designing efficient algorithms for reconstruction and equivalence of such algebraic circuits."

Kayal received his PhD in theoretical computer science from the Indian Institute of Technology in 2007. He did postdoctoral research at the Institute for Advanced Study in Princeton and at Rutgers University. Since 2008, he has been working with the Microsoft Research Lab India as a researcher. With M. Agrawal and N. Saxena, he was awarded the Gödel Prize and the AMS Delbert Ray Fulkerson Prize, both in 2006, for their discovery of the AKS primality test. He received the Young Scientist Award of the Indian National Science Academy in 2012.

—From an Infosys announcement

Hans Schneider Prize Awarded

Pauline van den Driessche

Nicholas J. Higham

Pauline van den Driessche of the University of Victoria and **Nicholas J. Higham** of the University of Manchester have been awarded the 2022 Hans Schneider Prize of the International Linear Algebra Society. Van den Driessche received her PhD from the University College of Wales in 1964 and joined the University of Victoria in 1965, where she is now professor emerita. Her research involves aspects of stability in biomathematical models and matrix analysis; mathematical biology, especially models in epidemiology and ecology; and matrix analysis, especially stability and combinatorial matrix analysis. Her honors include the 2007 Krieger–Nelson Prize of the Canadian Mathematical Society, the inaugural Olga Taussky-Todd Lectureship at the 2007 International Congress on Industrial and Applied Mathematics, the 2013 David H. Turpin Gold Medal of the University of Victoria, and the CAIMS Research Prize of the Canadian Applied and Industrial Mathematics Society. She is a Fellow of the Society for Industrial and Applied Mathematics (SIAM). She is a member of the scientific management committee at the Centre for Disease Modeling at York University and a member of the scientific research board of the American Institute of Mathematics (AIM).

Higham received his PhD in 1985 from the University of Manchester under the supervision of George Hall. He became an appointed lecturer at Manchester in 1985 and has been Richardson Professor of Applied Mathematics since 1998. He has held visiting positions at Cornell University and the Institute for Mathematics and its Applications, University of Minnesota. He received a Royal Society–Wolfson Research Merit Award in 2003. His honors include the 1999 Junior Whitehead Prize, the 2008 Fröhlich Prize, and the 2019 Naylor Prize and Lectureship, all from the London Mathematical Society; the 2020 IMA Gold Medal of the Institute of Mathematics and its Applications; and the 2021 George Pólya Prize for Mathematical Exposition from SIAM. He was elected a Fellow of the Royal Society in 2007 and was awarded a Royal Society Research Professorship in 2018. He is a Fellow of the Society for Industrial and Applied Mathematics (SIAM), a Fellow of the Association for Computing Machinery (ACM), and a Member of Academia Europaea.

The Hans Schneider Prize in Linear Algebra is awarded by the International Linear Algebra Society for research, contributions, and achievements at the highest level of linear algebra and is awarded for an outstanding scientific achievement or for lifetime contributions.

—From Schneider Prize announcements

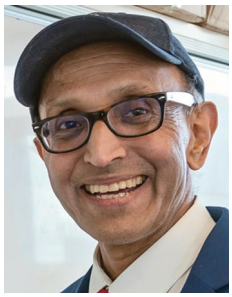
Prizes of Australian Mathematical Society

The Australian Mathematical Society has awarded several prizes for 2021.

Serena Dipierro

Serena Dipierro of the University of Western Australia (UWA) was awarded the Australian Mathematical Society Medal for her "outstanding contributions to the area of analysis and PDEs, with a special focus on the theory of nonlocal operators and free boundary problems." Her work "aims at establishing regularity properties and geometric features of the interfaces occurring in phase transitions. In addition to their mathematical interest, such questions arise naturally in applications to physics, engineering, mathematical finance, and population dynamics."

Dipierro received her PhD in 2012 from Scuola Internazionale Superiore di Studi Avanzati (SISSA) in Trieste. She held postdoctoral positions at the University of Chile and the University of Edinburgh and faculty positions at University of Melbourne and Università di Milano. She has been the recipient of a Humboldt Fellowship. She has served as the head of the Department of Mathematics and Statistics at UWA, as a council member of the Australian Mathematical Society, and as secretary of the Women in Mathematics Special Interest Group. The medal is awarded to a member of the Society under the age of forty for distinguished research in the mathematical sciences. She tells the *Notices*: "I am a very curious person in general and I love reading books, traveling, and visiting new places. Besides doing math, I also enjoy outdoor activities, and in particular kayaking and hiking."


Mathai Varghese

Mathai Varghese of the University of Adelaide was awarded the George Szekeres Medal for his "significant contributions to geometric analysis and to mathematical physics. Among the highlights are his co-invention of projective and fractional index theory, which has recently been generalized to certain infinite dimensional manifolds and for the Mathai–Quillen formalism in index theory and topological field theories. He is also renowned for his research in string theory, T-duality in a background flux with a change of topology and novel applications to condensed matter physics." He received his PhD from the Massachusetts Institute of Technology (MIT) under the supervision of Daniel G. Quillen. He is director of the Institute for Geometry and its Applications and Elder Professor of Mathematics at Adelaide, as well as adjunct professor in the Mathematical Sciences Institute at Australian National University. He has been a research fellow of the Clay Mathematics Institute and a visiting scientist at MIT (2000–2001), an ARC Senior Research Fellow at the University of Adelaide (2001–2005), and a senior research fellow at the Erwin Schrödinger Institute (2006). He was awarded the Australian Mathematical Society Medal in 2000, the ARC Discovery Outstanding Researcher Award in 2013, and an Australian Laureate Fellowship in 2017. He served as editor of the *Proceedings of the AMS* from 2008 to 2016. He is a fellow of the Australian Academy of Science, of the Australian Mathematical Society, and of the Royal Society of South Australia. Varghese tells the *Notices*: "I like to read popular science books, especially written by famous scientists. I also like to travel and taste cuisine all over the world (when this was possible!)."

Sarah Dart of the Queensland University of Technology received the 2021 Award for Teaching Excellence. She was honored for her use of technology "to support learning of mathematics for large and diverse student cohorts, including development of worked example videos to improve problem-solving skills, and implementation of personalized emails to foster an effective learning environment when transitioning to university." Dart received her PhD in 2018 from the Queensland University of Technology by investigating red blood cell shape and deformability from a numerical modeling perspective. She has been recognized by the Australasian Association for Engineering Education (2019) and Australian Awards for University Teaching (2020) and with a Senior Fellowship of the Higher Education Academy and a Vice Chancellor's Award for Excellence (2017). Her research interests are in engineering and mathematics education, educational technology, and academic development. She enjoys playing netball and going running with friends on weekends.


Sarah Dart

The Gavin Brown Prize is given for outstanding and innovative research published by members of the Society. The awardees for 2021 are the following:

Mike Meylan (University of Newcastle), **Luke Bennetts** (University of Adelaide), **Johannes Mosig** (Rasa Technologies, Berlin), **W. Erick Rogers** (Naval Research Laboratory, Stennis Space Center, Mississippi), **Martin Doble** (Polar Scientific, United Kingdom), and **Malte Peter** (University of Augsberg) for their paper "Dispersion relations, power laws, and energy loss for waves in the marginal ice zone," *Journal of Geophysical Research: Oceans* **123** (2018).

Brett Parker of the Australian National University for his paper "Holomorphic curves in exploded manifolds: Virtual fundamental class," *Geometry and Topology* **23** (2019).

—From Australian Mathematical Society announcements

Wallenberg Academy Fellows Announced

The Wallenberg Academy Fellowship Program has announced its new Fellows for 2021. The following individuals whose work involves the mathematical sciences were selected.


Hannes Thiel

Hannes Thiel of Kiel University, Germany, is a scholar in mathematics whose work will contribute to identifying mathematical objects. He received his PhD in mathematics in 2012 from the University of Copenhagen and has held positions at the University of Münster, the Fields

Institute in Toronto, and Dresden University of Technology. His current work deals with the classification and structure of operator algebras and, more specifically, C^*-algebras. He tells the *Notices* that he grew up in Potsdam, Germany, and remembers the fall of the Berlin Wall when he was six years old: "The atmosphere was exhilarating; it was surreal." He likes to read (particularly science fiction) and watch movies and television series. He is also involved in projects to raise awareness of difficulties faced by people with disabilities, especially visual disabilities.


Laura Donnay

Laura Donnay of the Vienna University of Technology works in mathematical physics and will use the fellowship to further develop mathematics for describing black holes. She is currently investigating in particular a newly discovered and intriguing infinite set of symmetries that appear close to black hole event horizons. Donnay received her PhD in 2016 from the University of Brussels. She held a postdoctoral research position at Harvard University from 2016–2017 and was a Black Hole Initiative Fellow and Postdoctoral Researcher at Harvard from 2017 to 2019. She has been awarded the Start-Preis of the Austrian Ministry for Science and the Marie Sklodowska-Curie Fellowship from the European Commission.

Silvia De Toffoli of Princeton University will explore mathematics' fallibility and human weaknesses. She holds a PhD in mathematics from the Technical University of Berlin as well as a PhD in philosophy from Stanford University. Her work focuses on philosophy of mathematics and epistomology.

—From Wallenberg Academy announcements

Neiger and Pernet Receive Best Paper Award

Vincent Neiger of the University of Limoges and **Clément Pernet** of Université Grenoble Alpes have been chosen to receive the 2021 Best Paper Award of the *Journal of Complexity* for their joint paper, "Deterministic computation of the characteristic polynomial in the time of matrix multiplication," *Journal of Complexity* **67** (2021). The prize of US$4,000 will be divided between the awardees.

—Erich Novak
Editor in Chief, Journal of Complexity

2020 Rosenthal Prize Awarded

Doug O'Roark, executive director of Math Circles of Chicago, was awarded the 2020 Rosenthal Prize for Innovation and Inspiration in Math Teaching for his lesson "Towers and Dragons," in which "students discover a stunning connection between paper folding and a classic disc-moving puzzle." He received a cash prize of US$25,000. **Lauren Siegel,** director of the MathHappens Foundation in Austin, Texas, was named runner-up for her lesson, in which "students learn to appreciate ratios by making their own calipers and applying them to objects, photos, and geometric figures." She received a cash prize of US$5,000. The prizes are awarded by the National Museum of Mathematics (MoMath) and are designed to recognize and promote hands-on math teaching in upper elementary and middle school classrooms.

—MoMath announcement

Rhodes Scholars 2022

The Rhodes Trust has announced the names of the American scholars chosen to receive the 2022 Rhodes Scholarships. The scholars will spend two to three years studying at the University of Oxford. The value of the scholarships averages approximately US$75,000 per year. The names and brief biographies of the scholars whose work involves the mathematical sciences follow.

Nicholas Hayes of Long Valley, New Jersey, is a senior at the University of Alabama, where he majors in applied mathematics and German. He also did an intensive course in Swahili language and culture in Tanzania as a Boren Scholar. An ultramarathoner, he was named the outstanding junior at the University of Alabama on the basis of scholarship, leadership, and service. Hayes edited an undergraduate science journal, interned at the National Oceanic and Atmospheric Administration in fisheries science, and has published in academic journals in politics and biology. He has also published poetry and translates between English and Swahili. Hayes will do the MSc in mathematical sciences and the MSt in linguistics, philology, and phonetics at Oxford.

Michael Y. Cheng of Wynnewood, Pennsylvania, is a Harvard College senior concentrating in history and mathematics concurrently with a master's degree in computer science. From an immigrant household, he struggled with English and received special language training until he was sixteen, yet he began his studies at Drexel University while still in high school. Cheng's career interests are in energy technology and policy. He has researched perovskite solar

panels in Taiwan, urban development policy in Argentina, and the history of energy transitions worldwide. He taught himself to swim by watching YouTube videos before walking onto the Harvard varsity men's lightweight crew. He was elected as a junior to Phi Beta Kappa. Cheng plans to do the MSc in energy systems and the MSc in political theory research at Oxford.

Elizabeth Guo of Plano, Texas, is a senior at Harvard College, where she majors in physics. Elizabeth's undergraduate research explores the intersection of science and the law. As an intern at the US Department of Commerce, Elizabeth's work helped inform the incoming president's strategic plan. She currently serves as a news executive of the *Harvard Crimson* and is a member of the Harvard College Honor Council. She was elected to Phi Beta Kappa as a junior. While at Oxford, she plans to pursue an MSc in mathematical and theoretical physics and an MSc in social science of the Internet.

—From a Rhodes Trust announcement

Credits

Photo of Neena Gupta is courtesy of the Indian Statistical Institute.
Photo of Bhargav Bhatt is courtesy of Katie Grillaert.
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