Mathematics People

Zhang Awarded 2010 SASTRA Ramanujan Prize

WEI ZHANG of Harvard University has been awarded the 2010 SASTRA Ramanujan Prize. This annual prize is awarded for outstanding contributions to areas influenced by the Indian genius Srinivasa Ramanujan. The age limit for the prize has been set at thirty-two because Ramanujan achieved so much in his brief life of thirty-two years. The prize carries a cash award of US$10,000.

The 2010 SASTRA Ramanujan Prize citation reads as follows: "Wei Zhang has made far-reaching contributions by himself and in collaboration with others to a broad range of areas in mathematics, including number theory, automorphic forms, *L*-functions, trace formulas, representation theory, and algebraic geometry." We highlight some of his path-breaking contributions: In 1997, Steve Kudla constructed a family of cycles on Shimura varieties and conjectured that their generating functions are actually Siegel modular forms. The proof of this conjecture for Kudla cycles of codimension 1 is a major theorem of the Fields Medalist Borcherds. In his Ph.D. thesis, written under the direction of Shou-Wu Zhang at Columbia University, New York, Wei Zhang established conditionally, among other things, a generalization of the results of Borcherds to higher dimensions, and in that process essentially settled the Kudla conjecture. His thesis, written when he was just a second-year graduate student, also extended earlier fundamental work of Hirzebruch-Zagier and of Gross-Kohnen-Zagier. The thesis opened up major lines of research and led to significant collaboration with Xinyi Yuan and his Ph.D. advisor Shou-Wu Zhang. In the first of a series of joint papers (published in *Compositio Math* in 2009), the results of Wei Zhang's important thesis are generalized to totally real fields. In a paper on heights of CM points in Shimura varieties, Wei Zhang, along with Shou-Wu Zhang and Xinyi Yuan, establish an arithmetic analogue of a theorem of Waldspurger that connects integral periods to special values of *L*-functions. This paper, which goes well beyond all earlier work on formulas of Gross-Zagier type, will appear in the book series *Annals of Mathematical Studies*.

"Yet another outstanding contribution of Wei Zhang is conveyed in his two recent preprints—one on relative trace formulas and the Gross-Prasad conjecture and another on arithmetic fundamental lemmas. In these works he has made decisive progress on certain general conjectures related to the arithmetic intersection of Shimura varieties; in that process he has successfully transposed major techniques due to Jacquet and Rallis into an arithmetic intersection theory setting. With these two preprints and his seminal earlier work, Wei Zhang has emerged as a worldwide leader in his field."

Wei Zhang was born on July 18, 1981, in the People's Republic of China and received his bachelor's degree from Beijing University in 2004. He received his Ph.D. from Columbia University in 2009 under the supervision of Shou-Wu Zhang. He joined Harvard University as a postdoctoral fellow in 2009–2010. He currently holds the Benjamin Peirce Lectureship at Harvard. His research interests are number theory, automorphic forms, and algebraic geometry.

The 2010 SASTRA Ramanujan Prize Committee consisted of Krishnaswami Alladi (chair), Dorian Goldfeld, Christian Krattenthaler, Ken Ono, Wolfgang Schmidt, Jeffrey Vaaler, and Akshay Venkatesh. Previous recipients of the SASTRA Ramanujan Prize are Manjul Bhargava and Kannan Soundararajan (2005), Terence Tao (2006), Ben Green (2007), Akshay Venkatesh (2008), and Kathrin Bringmann (2009).

—From a SASTRA Ramanujan Prize announcement

ICIAM Prizes Awarded

The International Council for Industrial and Applied Mathematics (ICIAM) will award several prizes at its 2011 meeting in Vancouver, British Columbia.

Emmanuel J. Candès of Stanford University has been awarded the Collatz Prize for his "exemplary work in numerical solution of wave propagation problems and compressive sensing, in addition to anisotropic extensions of wavelets." The Collatz Prize recognizes individual scientists under age forty-two worldwide for outstanding research work in industrial and applied mathematics. It carries a cash award of US$1,000.

Alexandre J. Chorin of the University of California, Berkeley, and the Lawrence Berkeley National Laboratory was awarded the Lagrange Prize for his "fundamental and original contributions to applied mathematics, fluid mechanics, statistical mechanics, and turbulence modeling." The Lagrange Prize recognizes mathematicians for career-long contributions to applied mathematics and carries a cash award of US$3,000.

Vladimir Rokhlin of Yale University received the Maxwell Prize "for his research in the area of fast multipole methods. His research has revolutionized the field of numerical electromagnetism for radar and molecular dynamics for chemistry, among others." The Maxwell Prize is awarded for demonstrated originality in applied mathematics and carries a cash award of US$1,000.

James A. Sethian of the University of California, Berkeley, and the Lawrence Berkeley National Laboratory received the Pioneer Prize "for his research on areas such as medical imaging and geophysics, which have been fueled by fundamental methods and algorithms" that he pioneered. The Pioneer Prize was established for pioneering work introducing applied mathematical methods and scientific computing techniques to an industrial problem area or a new scientific field of applications. It carries a cash award of US$1,000.

Edward Lungu of the University of Botswana was awarded the Su Buchin Prize "for the development of mathematical models for problems related to Africa and for his work in developing teaching, research, and organizational structures for applied mathematics in Southern Africa." The Su Buchin Prize provides international recognition of outstanding contributions in applied mathematics made by individuals to emerging economies and in human development, particularly at the economic and cultural levels in developing countries. It carries a cash award of US$1,000.

—From an ICIAM announcement

Young Awarded CMS Doctoral Prize

Benjamin Young has been awarded the 2010 Doctoral Prize of the Canadian Mathematical Society (CMS). In his thesis work, Young proved several outstanding conjectures concerning "box counting". He was able to count the number of ways in which colored boxes can be piled in a corner with various predetermined color schemes. The answers came in the form of generating functions in several variables. Young received his Ph.D. in mathematics from the University of British Columbia and is currently participating in the program of Random Matrix Theory, Interacting Particle Systems and Integrable Systems at the Mathematical Sciences Research Institute (MSRI) in Berkeley, California. He will subsequently attend KTH Royal Institute of Technology in Stockholm for a Wallenberg Postdoctoral Fellowship. The CMS Doctoral Prize recognizes outstanding performance by a doctoral student.

—From a CMS announcement

Australian Mathematical Society Prizes

The Australian Mathematical Society has awarded its two major annual prizes. Kate Smith-Miles of Monash University was awarded the Australian Mathematical Society Medal, and Peter Hall of the University of Melbourne was honored with the George Szekeres Medal. The prize certificate for Smith-Miles reads: "Kate Smith-Miles is internationally known for interdisciplinary applications of mathematics, characterized by their extraordinary breadth, as well as an exceptional attention to rigour. She is especially respected for her influential studies of neural networks, chaotic systems, optimisation problems, and machine learning." The prize certificate for Hall reads: "Peter Hall's research has produced a wide variety of significant and influential results in probability theory and statistics. He has focused particularly on nonparametric statistics, especially resampling methods, extreme value techniques, fractal-based methodologies, and function estimation. His development of a theoretical basis for the bootstrap is arguably his most important contribution. Earlier in his career he did important work in probability, for example, on martingale methods, convergence rates, and percolation. He has provided considerable leadership to the profession through his work for professional societies, both in Australia and abroad, and as an editor. He has also taken up vigorously the cause of improving the lot of the mathematical sciences in Australia."

—From an Australian Mathematical Society announcement

Royal Society of Canada Elections

The Royal Society of Canada has elected three new fellows and one foreign fellow who work in the mathematical sciences. The new fellows are Richard Cleve, University of Waterloo; Ian Goulden, University of Waterloo; and David Thomson, Queen's University. David Cox of Oxford University was elected a foreign fellow.

—From a Royal Society announcement