Tsimerman Receives Aisenstadt Prize

JACOB TSIMERMAN of the University of Toronto has been awarded the 2017 André Aisenstadt Prize of the Centre de Recherches Mathématiques (CRM). The prize citation reads as follows: “Jacob Tsimerman is an extraordinary mathematician whose work at the interface of transcendence theory, analytic number theory and arithmetic geometry is remarkable for its creativity and insight.

“Jacob proved the existence of Abelian varieties defined over number fields that are not isogenous to the Jacobian of a curve. This had been conjectured by Katz and Oort and follows from the André-Oort conjecture. In joint work with several collaborators, Jacob established nontrivial bounds for the 2-torsion in the class groups of number fields. For quadratic fields, this can be done by genus theory but the general case was a complete mystery. With Bakker, Jacob has established geometric analogues of the Frey-Mazur uniform boundedness results for elliptic curves over function fields. Their approach has yielded powerful results with methods amenable to far more general applications.

“Among Jacob’s most notable accomplishments is his recent breakthroughs on the André-Oort conjecture. This conjecture about Shimura varieties, at the intersection of diophantine geometry and the arithmetic of automorphic forms, has been a central theme in arithmetic geometry for many years. Jacob already made important progress on it in his thesis, but in the last few years, working together with Pila, he created many of the technical tools for proving the case of the Siegel modular variety. There was still one piece that had to be completed on the size of Galois orbits. Jacob settled this final component in a brilliant short paper which showed that it follows from an average form of the Colmez conjecture. The latter has been proved by Andreata, Goren, Howard and Madapusi-Pera, and independently by Yuan and Zhang, thus giving a complete unconditional proof of the André-Oort conjecture for this Shimura variety.

“Besides being a brilliant and innovative researcher, Jacob is also an excellent expositor and teacher. Moreover, he has been active in Math Outreach through his work helping to train the Canadian team for the International Math Olympiad. He is currently the Chair of the Canadian IMO Committee.”

Jacob Tsimerman was born in Kazan, Russia, on April 26, 1988. He received his PhD in 2011 from Princeton University under Peter Sarnak, supported by an AMS Centennial Fellowship. He held a postdoctoral position at Harvard University. In 2014 he was awarded a Sloan Fellowship and joined the faculty at the University of Toronto. He was awarded the SASTRA Ramanujan Prize in 2015. He tells the Notices: “I love watching comedy, and Improv in particular, and go to the UCB [Upright Citizens Brigade] Theater in New York as often as I can.”

The Aisenstadt Prize is awarded yearly for outstanding achievement by a young Canadian mathematician no more than seven years past receipt of the PhD.

—From a CRM announcement

CMS Prizes Given

The Canadian Mathematical Society has awarded several prizes for 2017.

RICHARD HOSHINO of Quest University has received the 2017 Adrien Pouliot Award “for significant and sustained contributions to mathematics education in Canada.” He founded the Nova Scotia High School Math League, an outreach program that reaches thousands of students each year. He also served as the Director of the CMS National Camp for the top grade 9 and 10 high school students in Canada from 1999 to 2004 and led the Dalhousie Math Circles Outreach Program from 2002 to 2004. He has contributed problems to many mathematics competitions and wrote a novel for young people titled The Math Olympian. He has given frequent talks at high schools and led professional development workshops for high school math teachers. He is an active member of the Canadian Mathematics Education Study Group.
Schoen Awarded Hopf and Schock Prizes

Richard Schoen of the University of California Irvine has been awarded the 2017 Heinz Hopf Prize of ETH Zurich and the 2017 Rolf Schock Prize for his work in differential geometry and geometric analysis. The citation for the Hopf Prize reads in part: “Richard M. Schoen is a bridge-builder between physics and mathematics, and has enriched the theory of relativity with his proofs and geometric methods.” He is “a researcher who has introduced important mathematical techniques and new methods in the field of differential geometry, which turned out to have dramatic applications in the theory of general relativity, just at the border of maths and physics.” The Hopf Prize is awarded every two years at ETH Zurich and honors outstanding scientific achievements in the field of pure mathematics. Schoen delivered the Hopf Lectures on “How Curvature Shapes Space” in October 2017. The prize carries a cash award of 30,000 Swiss francs (approximately US$30,000).

The Rolf Schock Prize in Mathematics was awarded to Schoen for “groundbreaking work in differential geometry and geometric analysis, including the proof of the Yamabe conjecture, the positive mass conjecture, and the differentiable sphere theorem.” The citation reads in part: “Schoen works in the field of geometric analysis, which he and Shing-Tung Yau founded in the 1970s and 80s. It studies geometry through nonlinear partial differential equations. Development in and around geometric analysis has strikingly transformed large parts of mathematics and been a leading theme for thirty years, including in areas such as gauge theory in 4-dimensional topology (possible structures in space-time), the Floer-Gromov-Witten theory for pseudoholomorphic curves (closely linked to physics’ string theory), Ricci and mean curvature flow (proof of the Poincaré’s conjecture), Schoen has produced stunning results in this area from the very beginning. His work is characterised by outstanding technical skill and a clear vision of geometric relevance.” The Schock Prize carries a cash award of 500,000 Swedish krona (approximately US$60,000).

Schoen received his PhD in 1977 from Stanford University under Leon Simon and Shing-Tung Yau. He has held positions at the University of California Berkeley, New York University, the University of California San Diego, and Stanford University. His honors include a MacArthur Fellowship (1983), the Bôcher Memorial Prize (1989), the Lobachevsky Prize (2017), and the 2017 Wolf Prize. He is a vice president of the AMS.

Simon Awarded Heineman Prize

Barry Simon of the California Institute of Technology has been awarded the 2018 Dannie Heineman Prize for Mathematical Physics by the American Institute of Physics (AIP) and the American Physical Society (APS). According to the prize citation, Simon was honored “for his fundamental contributions to the mathematical physics of quantum mechanics, quantum field theory, and statistical mechanics, including spectral theory, phase transitions, and geometric phases, and his many books and monographs that have deeply influenced generations of researchers.” The citation reads in part: “The accomplishments of Barry Simon’s work form a collection of theoretical understandings ranging from anharmonic oscillators to phase transitions, accounting for a

—Elaine Kehoe

—From a CMS announcement
citation that he describes as somewhat of a ‘kitchen sink.’ His mathematical models have deep and fundamental applications to almost all fields of physics from condensed matter to atomic and molecular physics.”

Simon received his PhD in physics from Princeton University in 1970 and has been affiliated with Princeton as well as Caltech throughout his career. He received the Poincaré Prize of the IAMP in 2012, the Bolyai Prize of the Hungarian Academy of Sciences in 2015, and the Leroy P. Steele Prize for Lifetime Achievement from the AMS in 2016. He is coauthor with Mike Reed of the four-volume *Methods of Modern Mathematical Physics*. He is a fellow of the APS, the American Academy of Arts and Sciences, and the AMS and was vice president of the AMS in 1988–1989.

The Heineman Prize recognizes outstanding publications in the field of mathematical physics. The prize carries a cash award of US$10,000.

*Note.* See the two-part feature on Barry Simon’s work in the August and September 2016 *Notices.*

—From an AIP-APS announcement

### Munshi Awarded Infosys Prize

**Ritabrata Munshi** of the Tata Institute of Fundamental Research and the Indian Statistical Institute has been awarded the 2017 Infosys Science Foundation Prize in Mathematical Sciences “for his outstanding contributions to analytic aspects of number theory. Besides ingenious contributions to the Diophantine problem, he has established important estimates known as sub-convexity bounds for a large class of $L$-functions with methods that are powerful and original.” The Infosys Prizes recognize outstanding researchers and scientists in the fields of mathematical sciences, engineering and computer science, humanities, life sciences, physical sciences, and social sciences.

—From an Infosys announcement

### AWM Elects Inaugural Class of Fellows

The Association for Women in Mathematics (AWM) has announced the inaugural class in its new AWM Fellows Program to recognize individuals who have demonstrated a sustained commitment to the support and advancement of women in the mathematical sciences. The inaugural class consists of a group of mathematicians who have shown an unwavering commitment to promoting and supporting women in mathematics. The names and institutions of the new fellows follow.

- **Bettye Anne Case**, Florida State University
- **Ruth Charney**, Brandeis University
- **Carolyn Gordon**, Dartmouth College
- **Mary W. Gray**, American University
- **Helena Grundman**, AMS and Bryn Mawr College
- **Ruth Haas**, University of Hawai‘i at Manoa
- **Deanna Haunspberger**, Carleton College
- **Rhonda J. Hughes**, Bryn Mawr College
- **Trachette Jackson**, University of Michigan
- **Naomi Jochnowitz**, University of Rochester
- **Linda Keen**, City University of New York, Lehman College and the Graduate Center
- **Cathy Kessel**, Consultant, Berkeley, California
- **Barbara Keyfitz**, Ohio State University, Columbus
- **Genevieve Knight**, Coppin State College
- **Kristin Lauter**, Microsoft Research
- **Suzanne Lenhart**, University of Tennessee, Knoxville
- **Jill P. Mesirov**, University of California San Diego
- **James Morrow**, University of Washington
- **Jill Pipher**, Brown University
- **Judith Roitman**, University of Kansas
- **Linda P. Rothschild**, University of California San Diego
- **Bhama Srinivasan**, University of Illinois, Chicago
- **Jean E. Taylor**, Rutgers University and New York University, Courant Institute
- **Chuu-Lian Terng**, University of California Irvine
- **Mariel Vazquez**, University of California Davis
- **William Velez**, University of Arizona
- **Sylvia M. Wiegand**, University of Nebraska—Lincoln
- **Carol Wood**, Wesleyan University

—From an AWM announcement

### Laflamme Awarded CAP-CRM Prize

**Raymond Laflamme** of the University of Waterloo has been awarded the 2017 CAP-CRM Prize in Theoretical and Mathematical Physics by the Canadian Association of Physicists (CAP) and the Centre de Recherches Mathématiques (CRM) “for his groundbreaking contributions on quantum information,” including developing theoretical approaches to quantum error detection and devising and implementing new methods to make quantum information robust against corruption in both cryptographic and computational settings.

—From a CAP-CRM announcement

### Otto Awarded Pascal Medal

**Felix Otto** of the Max Planck Institute has been awarded the 2017 Blaise Pascal Medal in Mathematics of the European Academy of Sciences “in recognition for seminal contributions on stochastic homogenization, calculus
Lotfi A. Zadeh (1921–2017)

Lotfi A. Zadeh of the University of California Berkeley passed away on September 6, 2017. Zadeh was a pioneer in the field of what he called “fuzzy logic,” as described in his 1965 article, “Fuzzy Sets.” Fuzzy logic was a means of translating vague or ambiguous human concepts into concrete instructions for computers. Today its uses range from industrial processes and economic research to home appliances and consumer electronics. Zadeh was born on February 4, 1921, in Baku, Azerbaijan. His family moved to Iran, where he received a degree in science from the University of Tehran. He earned his master’s in electrical engineering from the Massachusetts Institute of Technology in 1946 and his PhD from Columbia University in 1949. He joined the faculty of Columbia and, with John Ragazzini, developed $Z$-transformations in discrete time signal processing and analysis. He moved to Berkeley in 1959. Among his many honors and awards are the IEEE Medal of Honor (1995), the Allen Newell Award of the Association for Computing Machinery (2001), the Benjamin Franklin Medal in Electrical Engineering (2009), and the Golden Goose Award (2017). He was a fellow of the Institute of Electrical and Electronics Engineers, the American Academy of Arts and Sciences, and the Association for Computing Machinery, among others, and was a member of the National Academy of Engineering.

—Elaine Kehoe

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