

Mathematics People

Nagurney and Zhigljavsky Receive Carathéodory Prize



Anna Nagurney

Anna Nagurney of the University of Massachusetts, Amherst, and **Anatoly Zhigljavsky** of Cardiff University have been awarded the 2019 Constantin Carathéodory Prize.

Nagurney's chief research focus is the applied and theoretical aspects of network systems, particularly in the areas of transportation and logistics, critical infrastructure, and economics and finance. She received her PhD from Brown University and was the first woman appointed to an endowed professorship in the University of Massachusetts system. She is a Fellow of INFORMS, the Regional Science Association International, and the Network Science Society. Nagurney tells the *Notices* that she is "honored that, according to the Mathematical Genealogy project, [my] academic ancestors include:

Maxwell, Newton, and Galileo! A poster hangs in [my] office to inspire students that they are standing on 'the shoulders of giants.'"

Zhigljavsky's research concentrates on statistical modeling in market research, multivariate statistical analysis, stochastic global optimization, probabilistic methods in search and number theory, time series analysis, and dynamical systems approaches for studying convergence of search algorithms. He received his PhD in 1981 and his Habilitation in 1987 from the University of St. Petersburg. He tells the *Notices*: "The best piece of luck I had in my life was finding my profession. Being a professional mathematician helped me to continuously enjoy my work, to stay creative and optimistic all my life, to meet many interesting people all around the world, and to advance in life regardless of political perturbations and economic difficulties in my native country, which was the Soviet Union." His major hobbies are tennis and sailing, and his dream is "to prove



Anatoly Zhigljavsky

the Riemann hypothesis by estimating the rate of decrease of discrepancies of weighted Farey fractions."

The prize is given biannually by the International Society of Global Optimization to an individual or a group for "fundamental contributions to theory, algorithms, and applications of global optimization."

—From *Carathéodory Prize announcements*

2019 Computer-Aided Verification Award



Jean-Christophe Filliâtre

Jean-Christophe Filliâtre of the Centre National de Recherche Scientifique (CNRS) and **K. Rustan M. Leino** of Amazon Web Services have been named the recipients of the 2019 Computer-Aided Verification (CAV) Award "for the design and development of reusable intermediate verification languages that have significantly simplified and accelerated the construction of practical automated deductive verifiers." Filliâtre received his PhD in 1999 from the University Paris-Sud under the supervision of Christine Paulin-Mohring. In 2001, he designed a tool, Why3, to be used as an intermediate language for program verification. It is used today to verify programs in various programming languages (C, Java, OCaml, Ada), to make an interface with theorem provers, to verify algorithms, or to teach program verification.



K. Rustan M. Leino

He enjoys woodworking, playing the drums, and playing soccer. Leino received his PhD from the California Institute of Technology in 1995. He has been technical lead in the Windows NT group, as well as principal researcher, at Microsoft Corporation, a researcher at DEC-Compaq SRC, and a visiting professor at Imperial College London. He is currently senior principal engineer in the automated reasoning group at Amazon Web Services. He has taught step

aerobics at the YMCA, is a multi-instrumentalist, and enjoys dancing and cooking. The CAV award is given annually for fundamental contributions to the field of computer-aided verification. The award carries a cash prize of US\$10,000 shared equally among recipients.

—From a CAV announcement

Williamson Awarded Christopher Heyde Medal



Geordie Williamson

Geordie Williamson of the University of Sydney has been awarded the 2019 Christopher Heyde Medal of the Australian Academy of Science. The citation reads: “Professor Williamson is a world leader in the field of geometric representation theory. Among his many breakthrough contributions are his proof, together with Ben Elias, of Soergel’s conjecture—resulting in a proof of the

Kazhdan–Lusztig positivity conjecture from 1979; his entirely unexpected discovery of counter-examples to the Lusztig and James conjectures; and his new algebraic proof of the Jantzen conjectures.” Williamson received his PhD from Albert-Ludwigs-Universität Freiburg in 2008 under Wolfgang Soergel. He was awarded the Chevalley Prize in Lie Theory of the AMS in 2016. His honors also include the European Mathematical Society Prize (2016), a Clay Research Award (2016), the 2017 New Horizons in Mathematics Prize (with Ben Elias), and the Australian Mathematical Society Medal (2018). He is currently director of the University of Sydney Mathematical Research Institute and will be Distinguished Visiting Professor at the Institute for Advanced Study in 2020–2021. The Heyde Medal recognizes distinguished research in the mathematical sciences by researchers up to ten years after receipt of the PhD who are normally resident in Australia.

—From a University of Sydney announcement

Prizes of the Mathematical Society of Japan

The Mathematical Society of Japan (MSJ) has awarded a number of prizes for the fall of 2019.

Takayoshi Ogawa of Tohoku University was awarded the 2019 Autumn Prize for his outstanding contributions to studies on the critical structure in nonlinear evolution equations. The Spring Prize and the Autumn Prize are



Takayoshi Ogawa

the most prestigious prizes awarded by the MSJ to its members. The Autumn Prize is awarded without age restriction to people who have made exceptional contributions in their fields of research.

The Analysis Prizes were awarded to **Fumio Hiroshima** of Kyushu University for the application of functional integration in mathematical quantum field theory; **Hidetaka**

Sakai of the University of Tokyo for research on Painlevé-type equations; and **Hiroki Sumi** of Kyoto University for studies on semigroups and random dynamics of rational functions of one complex variable.

The Geometry Prizes were awarded to **Kei Irie** of the University of Tokyo for studies on contact, symplectic topology, and string topology and to **Masaki Tsukamoto** of Kyushu University for studies on mean dimension in dynamical systems.

The Takebe Katahiro Prizes were awarded to the following individuals: **Kenta Hayano** of Keio University for studies on smooth mappings on 4-manifolds based on mapping class groups of surfaces; **Tomoyuki Hisamoto** of Nagoya University for studies on the stability and existence of special Kähler metrics on polarized manifolds; **Shinnosuke Okawa** of Osaka University for studies on noncommutative algebraic geometry; and **Keisuke Takasao** of Kyoto University for studies on weak solutions to volume-preserving mean curvature flow.

The Takebe Katahiro Prizes for Encouragement of Young Researchers were awarded to the following individuals: **Kenta Hashizume** of the University of Tokyo for a new approach to the minimal model program; **Masao Oi** of Kyoto University for explicit description and depth-preserving property of the local Langlands correspondence for classical groups; **Yuhei Suzuki** of Nagoya University for studies on operator algebras arising from topological dynamical systems; **Shota Tateyama** of Waseda University and the University of Tokyo for studies on qualitative properties of L^p -viscosity solutions to fully nonlinear partial differential equations; and **Hiroyuki Tsurumi** of Waseda University for work on well- and ill-posedness of the Navier–Stokes equations in Besov spaces.

—From an MSJ announcement

2019 Davidson Fellows

Several high school students whose projects involved the mathematical sciences have been named 2019 Davidson Fellows.



Aayush Karan

A scholarship in mathematics worth US\$25,000 was awarded to **Aayush Karan** of Muskego, Wisconsin, for his project “Generating Set for Nonzero Determinant Links under Skein Relation.” Karan was a finalist in the 2019 Regeneron Science Talent Search and received a Second Award at the International Science and Engineering Fair. He plans to study mathematics at Harvard University.

He says: “I absolutely love the piano, which I have been playing for the last fourteen years. Although I tried out the violin and the guitar when I was younger, something about the watery tone that the piano produces drew me towards this instrument above the others.” He also loves watching sports, especially basketball and football, and volunteers at the Red Cross.



Daniel Zhu

A scholarship worth US\$10,000 was awarded to **Daniel Zhu** of Potomac, Maryland, for his project “On the Okounkov-Olshanski Formula for the Number of Skew Shapes.” Zhu plans to study mathematics and possibly physics at the Massachusetts Institute of Technology. He enjoys playing the violin, solving puzzles, and participating in cybersecurity competitions.

Merrick Cai of Kings Park, New York, received an honorable mention.

The Davidson Fellows program, a project of the Davidson Institute for Talent Development, awards scholarships to students eighteen years of age or younger who have created significant projects that have the potential to benefit society in the fields of science, technology, mathematics, literature, music, and philosophy

—From a Davidson Fellows announcement

Project NExT Fellows Chosen

Project NExT (New Experiences in Teaching) of the Mathematical Association of America (MAA) offers new or recent PhDs in the mathematical sciences year-long fellowships to allow them to connect with master teachers and leaders in the mathematics community and address the three main aspects of an academic career: teaching, research, and service. The AMS sponsors a number of these fellowships each year. For 2019, the new fellows sponsored by the AMS are: **Heather Brooks**, University of California, Los Angeles;

Huijing Du, University of Nebraska–Lincoln; **David Duncan**, James Madison University; **Punit Gandhi**, Virginia Commonwealth University; **Hiram Lopez Valdez**, Cleveland State University; and **Elizabeth Matson**, Alfred University.

—Project NExT announcement

Royal Society of Canada Elections

The Royal Society of Canada (RSC) has elected its new Fellows for 2019. **Juncheng Wei** of the University of British Columbia and **Phelim Boyle** of Wilfrid Laurier University have been elected Fellows in the Division of Mathematical and Physical Sciences. Wei’s work involves nonlinear partial differential equations, including a counterexample to the DeGiorgi Conjecture. Boyle uses mathematical methods to solve problems in the fields of finance and insurance and to make pioneering contributions to quantitative finance. **Raouf Boutaba** of the University of Waterloo was elected in the Division of Applied Sciences and Engineering. He is a leading researcher in the management of communication networks.

—From an RSC announcement

NDSEG Graduate Fellowships Awarded

The National Defense Science and Engineering Graduate Fellowships program has awarded its fellowships for 2019. The fellows in the mathematical sciences follow, with their current institutions (in parentheses), their planned graduate institutions, and the agency granting the fellowships.

Mathematics:

- **Paolo Bertolotti** (Columbia University), Massachusetts Institute of Technology, Air Force Office of Scientific Research (AFOSR)
- **Sinho Chewi** (University of California, Berkeley), Massachusetts Institute of Technology, Army Research Office (ARO)
- **John Cobb** (College of Charleston), University of Wisconsin–Madison, AFOSR
- **Carlynn Fagnant** (Austin College), Rice University, AFOSR
- **Cailan Li** (University of California, Berkeley), Columbia University, AFOSR
- **Kevin Miller** (Brigham Young University), Northwestern University, AFOSR
- **Austin Stromme** (University of Washington, Seattle), Massachusetts Institute of Technology, ARO

Computer and Computation Sciences:

- **David Brandfonbrener** (Yale University), New York University, ARO
- **Shyamal Buch** (Stanford University), Stanford University, Office of Naval Research (ONR)
- **Elijah Christensen** (University of Washington), University of Colorado, ONR
- **Maggie Collier** (University of Alabama, Birmingham), University of California, Santa Barbara, ONR
- **Charles Eckert** (Binghamton University, State University of New York), University of Michigan, Ann Arbor, AFOSR
- **Scott Fleming** (Stanford University), Stanford University, ONR
- **Daniel Fu** (Harvard University), Stanford University, ARO
- **Victor Gonzalez** (Rice University), University of Illinois at Urbana-Champaign, AFOSR
- **Brian Hie** (Stanford University), Massachusetts Institute of Technology, ONR
- **Keane Lucas** (US Air Force Academy), Carnegie Mellon University, ONR
- **Michela Meister** (Stanford University), Cornell University, ARO
- **Christopher Miller** (Pennsylvania State University), University of California, Los Angeles, ONR
- **Karl Otness** (Harvard University), New York University, ARO
- **Michael Rosenberg** (University of Michigan), University of Maryland, AFOSR
- **Gabriel Ryan** (Swarthmore College), Columbia University, ONR
- **Nicholay Topin** (University of Maryland, Baltimore County), Carnegie Mellon University, ONR
- **Kai Xiao** (Massachusetts Institute of Technology), Massachusetts Institute of Technology, AFOSR
- **Sang Xie** (Stanford University), Stanford University, ONR
- **Drew Zagieboylo** (University of California, Berkeley), Cornell University, AFOSR
- **Aaron Zhang** (Brown University), University of Chicago, ARO

—NDSEG announcement

Pi Mu Epsilon Student Paper Awards

The Pi Mu Epsilon National Mathematics Honor Society makes awards to student members who give outstanding talks at the Pi Mu Epsilon National Conference, held in

conjunction with the Mathematical Association of America (MAA) Summer MathFest. Each student honoree receives a cash award of US\$150. The AMS provides partial support for these awards.

The names of the honorees, their institutions, and the titles of their talks follow.

- **Haley Colgate**, Colorado College, “Measuring Gerrymandering: Flaws in Traditional Measures”
- **Maria Cummings**, Randolph-Macon College, “Investigations into the Discrete Arithmetic-Geometric Mean”
- **Amanda Cusimano**, Xavier University, “3-Cyclic Bandwidth and 3-Cyclic Bandwidth Critical Graphs”
- **Niyousha Davachi**, University of Texas at Arlington, “Equations of Mathematical Physics and Lagrangians”
- **Anthony Dickson**, Youngstown State University, “On Inverse Semigroups Associated with Markov Subshifts”
- **Jonathan Feigert**, Youngstown State University, “Presentations of Common Groups”
- **Martha Hartt**, Randolph-Macon College, “A Proof of Bertrand’s Postulate”
- **Xiaomin Li**, University of Illinois at Urbana-Champaign, “Almost Beatty Partitions and Optimal Scheduling Problems”
- **Janelle Nelson**, Howard University, “The Statistical Physics of Intrinsically Disordered Proteins (IDPs)”
- **Marco Pettinato**, Lewis University, “Predictive Modeling and Analysis of Softball Using Linear Algebra-Based Ranking Systems”
- **Ryan Wartenberg**, Washington College, “Triangulations and Tamari Lattices”
- **Isaac Weiss**, College of Wooster, “Measuring Compactness of Legislative Districts”
- **Everett Yang**, Texas A&M University, “A General Algorithm for Constrained Robot Motion Planning”

—Pi Mu Epsilon announcement

Credits

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