Mathematics People

Rudich and Razborov Awarded Gödel Prize

STEVEN RUDICH of Carnegie Mellon University and ALEXANDER A. RAZBOROV of the Steklov Mathematical Institute in Moscow were named recipients of the Gödel Prize of the Association for Computing Machinery (ACM) at the ACM Symposium on Theory of Computing, June 11–13, 2007, in San Diego. The Gödel Prize for outstanding papers in the area of theoretical computer science is sponsored jointly by the European Association for Theoretical Computer Science (EATCS) and the Special Interest Group on Algorithms and Computation Theory of the ACM (ACM-SIGACT). The prize carries a cash award of US$5,000.

Rudich and Razborov were recognized for their work on the P vs. NP problem, a classic question concerning computational complexity that underlies the security of ATM cards, computer passwords, and electronic commerce. It is one of the seven Millennium Problems that the Clay Mathematics Institute has offered US$1 million for solving. The P vs. NP question asks whether the class of problems with solutions that can be quickly recognized (complexity class NP) is the same as the class of problems with solutions that can be quickly generated (complexity class P). Rudich and Razborov found that a wide class of proof techniques cannot be used to resolve this challenge unless widely held conventions are violated. These conventions involve well-defined instructions for accomplishing a task that rely on generating a sequence of numbers (known as pseudorandom number generators). They show that other proof techniques need to be applied to address this basic, unresolved challenge. Their findings were published in a paper titled "Natural proofs" in the *Journal of Computer and System Sciences* in 1997.

Rudich is editor of the *Journal of Cryptology*. His research interests are computational complexity theory, cryptography, and combinatorics. He is a magician and also serves as director of Andrew's Leap, a highly selective summer program for Pittsburgh-area high school students interested in math and science.

Razborov is an editor of the journal *Theoretical Computer Science* and was awarded the Nevanlinna Prize of the International Mathematical Union in 1990 for his contributions to complexity theory.

The Gödel prize is named for Kurt Gödel (1906–1978), an Austrian-American mathematician and philosopher who had a major impact on the foundations of computer science and was among the first to puzzle over the P vs. NP problem.

—Elaine Kehoe

Venkatesh Awarded 2007–2008 Salem Prize

AKSHAY VENKATESH of the Courant Institute of Mathematical Sciences, New York University, has been awarded the Salem Prize for 2007–2008 for his contributions to the analytic theory of automorphic forms and its applications to classical and modern problems in number theory, in particular his introduction of novel methods that combine analytic- and ergodic-theoretic techniques to resolve long-standing problems.

The prize committee for the 2007–2008 prize consisted of J. Bourgain, C. Fefferman, P. Jones, N. Nikolski, P. Sarnak, and J.-C. Yoccoz.

The Salem Prize is awarded every year to a young mathematician judged to have done outstanding work in the field of analysis.

—Jean Bourgain, Institute for Advanced Study, Princeton

Ritter Receives 2007 Information-Based Complexity Prize

KLAUS RITTER of Technische Universität Darmstadt has been named the recipient of the 2007 Information-Based Complexity Prize. The prize consists of US$3,000 and a plaque. The award will be presented at the Foundations of Computational Mathematics (FoCM) Conference in Hong Kong in June 2008.

This annual prize is given for outstanding contributions to information-based complexity.

—Joseph Traub, Columbia University

Fearnhead Awarded Adams Prize

PAUL FEARNHEAD of Lancaster University has been awarded the 2007 Adams Prize by the University of Cambridge for major contributions to several areas of computational statistics and population genetics. The selected topic for the prize in 2007 was statistics.

The Adams Prize is awarded each year by the Faculty of Mathematics and St. John's College to a young researcher based in the United Kingdom who is doing first-class international research in the mathematical sciences. The prize is named after the mathematician John Couch Adams and was endowed by members of St. John's College. It is currently worth 13,000 pounds (approximately US$26,000), of which one-third is awarded to the prizewinner on announcement of the prize, one-third is provided to the prizewinner's institution (for research expenses of the prizewinner), and one-third is awarded to the prizewinner on acceptance for publication in an internationally recognized journal of a substantial (normally at least twenty-five printed pages) original survey article of which the prizewinner is an author.

—From a University of Cambridge announcement

Goldin Receives Michler Memorial Prize

REBECCA GOLDIN of George Mason University has received the first annual Rebecca I. Michler Memorial Prize. The prize, given by the Association for Women in Mathematics and Cornell University, gives a midcareer woman mathematician a residential fellowship in the Cornell University mathematics department without teaching duties.

Goldin received her Ph.D. from the Massachusetts Institute of Technology in 1999, under the direction of Victor Guillemin. She received a National Science Foundation Postdoctoral Fellowship, which allowed her to spend two and a half years at the University of Maryland. She is now an associate professor at George Mason University and since 2004 has been director of research at Statistical Assessment Service, a nonprofit organization affiliated with George Mason. Her area of research is symplectic geometry.

The Michler Prize is made possible by a donation from the family of Ruth I. Michler, a mathematician at the University of North Texas whose untimely death in 2000 at the age of thirty-three cut short her promising career.

—From an AWM announcement

Stewart Awarded Peano Prize

IAN STEWART of the Mathematics Institute, University of Warwick, has been awarded the 2006 Premio Peano from the Associazione Subalpina Mathesis in Turin, Italy, for the Italian translation of his book *Letters to a Young Mathematician*.

Stewart is best known for his popular science writing on mathematical themes. He has received the 1999 Communications Award of the Joint Policy Board for Mathematics and the 2000 Gold Medal of the United Kingdom's Institute for Mathematics and Its Applications. He won the 2001 Sunyer i Balaguer Prize jointly with Martin Golubitsky. He was elected a Fellow of the Royal Society in 2001 and won the Public Understanding of Science and Technology Award of the American Association for the Advancement of Science in 2002. From 1990 to 2001 he wrote the "Mathematical Recreations" column in *Scientific American* magazine. He is also a writer of science fiction. His present field of interest is the effects of symmetry on dynamics, with applications to pattern formation and chaos theory in areas including animal locomotion, fluid dynamics, mathematical biology, chemical reactions, electronic circuits, computer vision, quality control of wire, and intelligent control of spring coiling machines.

—Elaine Kehoe

Prizes of the Mathematical Society of Japan

The Mathematical Society of Japan (MSJ) awarded a number of prizes in spring 2007.

KENJI NAKANISHI of Kyoto University received the 2007 Spring Prize for his contributions to the study of nonlinear dispersive equations. The Spring Prize is awarded each year to a mathematician who is not older than forty and has made an outstanding contribution to mathematics.

The 2007 Algebra Prize was awarded to EIICHI BANNAI of Kyushu University for his contribution to the study of algebraic combinatorics and to KOUTA YOSHIOKA of Kobe University for his contribution to the theory of moduli spaces of vector bundles.

The Publication Prize is given for distinguished contributions to the mathematical literature. The awardees for 2007 are: KAORU AOKI, for translations into Japanese of such books as *Fermat's Last Theorem* by Simon Singh and *Kepler's Conjecture* by George G. Szpiro; HIDEO ARAI, of the publisher Iwanami Shoten, for planning, editing, and publishing a number of leading mathematical books; AKIHIRO NOZAKI, a writer whose books are full of humor and clear writing that can be enjoyed by a wide range of readers, from children to mathematicians; the book series Foundation of Differential Geometry by SHOSHICHI KOBAYASHI and KATSUMI NOMIZU, mathematical classics that have changed the idea of differential geometry by putting the concept of "connection" at the core of the theory; and the Oka-Kiyoshi electronic library, based at the library of Nara Women's University, for making publicly available a variety of works by Japanese mathematician Kiyoshi Oka.

The Seki-Takakazu Prize, which honors people and organizations that have supported and encouraged the

development of mathematics in Japan over many years, was awarded for 2007 to the Institut des Hautes Études Scientifiques (IHÉS) for its contributions to establishing strong relationships between mathematicians in Japan and France through its offerings of invaluable research exchange opportunities for the development of mathematics since 1958.

—From a Mathematical Society of Japan announcement

AMS Menger Awards at the 2007 ISEF

The 2007 Intel International Science and Engineering Fair (ISEF) was held May 13–18, 2007, in Albuquerque, New Mexico. This was the fifty-eighth ISEF. More than fifteen hundred 9th through 12th graders from fifty-one countries competed in the fair. Student finalists who compete at the ISEF have gone through a step process to qualify and have won an all-expense-paid trip to the ISEF. They qualified by winning local, regional, and state fairs in the United States or national science fairs abroad. In addition to numerous grand awards presented by the ISEF, seventy-two federal agencies and professional and educational organizations, including the AMS, participated by giving special awards. Prizes awarded by the AMS included cash, certificates, books, and tote bags.

For the AMS this was the twentieth year of participation in the ISEF, and it was the eighteenth year of the presentation of the Karl Menger Awards. The members of the 2006–2007 AMS Menger Prize Committee and AMS Special Award Judges were Dmitry Fuchs, University of California, Davis; David Scott, University of Puget Sound; and Tatiana Shubin, San Jose State University (chair). The panel of judges reviewed all fifty-nine individual and team projects in mathematics and interviewed each student under consideration for a Menger Prize. The AMS gave awards to one first-place winner, two second-place winners, and four third-place winners, and honorable mentions to five others.

The Karl Menger Memorial Prize winners are as follows:

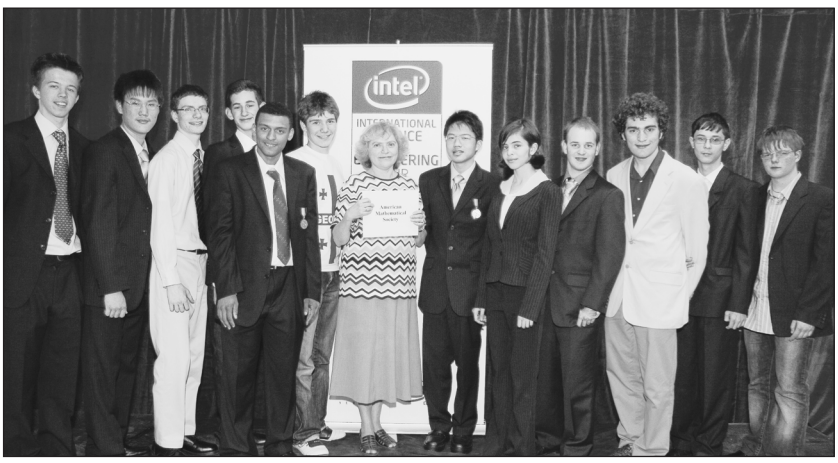
First-Place Award (US$1,000): "The String Topology BV Algebra, Hochschild Cohomology and the Goldman Bracket on Surfaces", DMITRY VAINTROB, 18, South Eugene High School, Eugene, Oregon.

Second-Place Award (US$500): "EASE Polygons Are Not Easy", CHENG-TAO CHUNG, 17, Taipei Municipal Jianguo High School, Taipei, Taiwan, Chinese Taipei; "Short Billiards", DANIEL K. BEZDEK, 17, Notre Dame High School, Calgary, Alberta, Canada.

Third-Place Award (US$250): "A Canon of Canonical Forms", CHRISTOPHER LOPEZ, 17, The Bronx High School of Science, Bronx, New York; "Function Pools", HAGAI HELMAN, 18, Reut School, Jerusalem, Israel; "Endless Propagation: The Arithmetic Rules of Regular Pentagons", ALBERT C. LIU, 16, Municipal Kaohsiung Senior High School, Kaohsiung City, Taiwan, Chinese Taipei; "Ratio of Total Edge Lengths of Two Simplices, Where One Contains Another", NIKITA M. SAVUSHKIN, 16, School #1134, Moscow, Russia.

Honorable Mention Awards: "Recurrence Relation for Congruum Problem Solutions", LADO MESKHISHVILI, 16, Georgian-American High School, Tbilisi, Georgia Republic; "Universal Law for the Transition from Chaos to Periodicity in Nonlinear Physical Systems", ALMAS U. ABDULLA, 13, Palm Bay High School, Melbourne, Florida; "Results in Geometric Inequalities", AVI W. LEVY, 15, West Linn High School, West Linn, Oregon; "Infinite Product Expansions of the nth Root", ARDIT KRONI, 16, Synge Street CBS, Dublin, Ireland; "On Realization of Graphs on the Klein Bottle", ALEXEY S. TELISHEV, 16, Grammar School #77, Naberezhnye Chelny, Tatarstan, Russia.

The first-place winner, Dmitry Vaintrob, also won one of the top three grand awards of US$50,000, plus the Seaborg Award. Earlier he had won first place in the 2006 Siemens competition and third place in the 2006 Intel Competition. His ISEF project demonstrated interrelations between topology, homological algebra, and mathematical physics. For an aspherical manifold X, Dmitry constructed a BV-algebra isomorphism between the cohomology of the free loop space of X and Hochschild cohomology of the group algebra of the fundamental group of X. Dmitry clearly possesses knowledge and insight into a deep and difficult area of mathematics. This knowledge is especially impressive for someone so young. He has great potential to contribute much to mathematics, his chosen field.



Menger Prize winners (l to r): Ardit Kroni, Albert Ciehyang Liu, Avi William Levy, Hagai Helman, Christopher Lopez, Lado Meskhishvili, Committee Chair Tatiana Shubin, Cheng-Tao Chung, Almas U. Abdulla, Daniel Karoly Bezdek, Dmitry Vaintrob, Alexey S. Telishev, Nikita M. Savushkin.

Other winners impressed the panel by the breadth of topics in their projects, including geometry, algebra, set theory, number theory, algorithms, combinatorics, and nonlinear dynamics. Many projects displayed a high level of sophistication; others showed incredible imagination and creativity. The students' enthusiasm was overwhelming, and many of

them continued working on their problems right there in the exhibit hall. They were so eager to share their ideas that interviewers were leaving energized and hopeful that the future of our profession would be ensured by the influx of talented and hard-working young people.

The AMS's participation in the Intel-ISEF is supported in part by income from the Karl Menger Fund, which was established by the family of the late Karl Menger. For more information about this program or to make contributions to the fund, contact the AMS Development Office, 201 Charles Street, Providence, RI 02904-2294; send email to development@ams.org, or telephone 401-455-4111.

—Tatiana Shubin, San Jose State University

Humboldt Foundation Research Awards

The Alexander von Humboldt Foundation grants up to one hundred Humboldt Research Awards annually to scientists and scholars from abroad with internationally recognized academic qualifications. The research award honors the academic achievements of the award winner's lifetime. Award winners are invited to carry out research projects of their own choice in Germany in cooperation with colleagues for periods of between six months and one year. The award amounts to 60,000 euros (approximately US$80,000).

Among those receiving Humboldt Research Awards in 2007 are twenty-one scholars whose work involves the mathematical sciences. Following are their names, home institutions, and the institutions in Germany that they will visit.

SUSANNE BRENNER, Louisiana State University: Humboldt-Universität Berlin; FERDINANDO CICALESE, University of Salerno: Universität Bielefeld; LANE A. HEMASPAANDRA, University of Rochester: Universität Düsseldorf; OLGA HOLTZ, University of California, Berkeley: Technische Universität Berlin; RICHARD D. JAMES, University of Minnesota: Max-Planck-Institut für Mathematik in den Naturwissenschaften; MOSHE JARDEN, Tel Aviv University: Universität Erlangen-Nürnberg; YURI KIFER, Hebrew University of Jerusalem: Humboldt-Universität Berlin; OMAR M. KNIO, Johns Hopkins University: Konrad-Zuse-Zentrum für Informationstechnik; ALEXANDER KOMECH, Universität Wien: Max-Planck-Institut für Mathematik in den Naturwissenschaften and Technische Universität München; MARC LEVINE, Northeastern University: Universität Duisburg-Essen; DILIP MADAN, University of Maryland, College Park: Universität Freiburg; JOSE A. DE LA PEÑA, Universidad Nacional Autónoma de Mexico: Universität Bielefeld; GOPAL PRASAD, University of Michigan: Max-Planck-Institut für Mathematik, Bonn, and Universität Bielefeld; ANDREI S. RAPINCHUK, University of Virginia: Universität Bielefeld; IDUN REITEN, Norwegian University of Science and Technology: Universität Bielefeld; BENJAMIN SCHLEIN, University of California, Davis: Universität München; PETER SCHRÖDER, California Institute of Technology: Technische Universität Berlin; BERND STURMFELS, University of California, Berkeley: Technische Universität Berlin; HENRYK WOZNIAKOWSKI, University of Warsaw: Mathematisches Institut Universität Jena; CHANGCHANG XI, Beijing Normal University: Universität Köln; and JINCHAO XU, Pennsylvania State University: Max-Planck-Institut für Mathematik in den Naturwissenschaften and Universität Heidelberg.

—Elaine Kehoe

Ford Foundation Diversity Fellowships Awarded

The names of the recipients of the Ford Foundation Diversity Fellowships for 2006 have been announced. The Ford Foundation's predoctoral, dissertation, and postdoctoral fellowship programs seek to increase the presence of underrepresented minorities on college faculties. Awardees later serve as role models and mentors for a new generation of scholars. NANCY RODRIGUEZ of the University of California, Los Angeles, was awarded a Predoctoral Fellowship of US$20,000 a year for up to three years. She is a student in the field of applications of mathematics. GRACE MARIE BENIGNO of the University of Maryland has been awarded a Dissertation Fellowship of US$21,000 for one year. Her field is mathematics education.

—From a Ford Foundation announcement

Royal Society of London Elections

Six mathematicians are among those elected as new fellows and foreign members of the Royal Society of London for 2007. They are: GEORGE F. R. ELLIS of the University of Cape Town for his work on relativity and cosmology; NICHOLAS HIGHAM of the University of Manchester for his research on numerical linear algebra; EDWIN A. PERKINS of the University of British Columbia for solving several hard problems concerning the behavior of Brownian motion; TERENCE C.-S. TAO of the University of California, Los Angeles, for his contributions to analysis; TREVOR D. WOOLEY of the University of Bristol for his contributions to analytic number theory, especially additive number theory; and MICHAEL O. RABIN of Harvard University for his foundational role in the creation of complexity theory through his axiomatic treatment of the difficulty of computations.

—From a Royal Society announcement