
Mathematics People

Cahn Receives Kyoto Prize

JOHN W. CAHN has received the 2011 Kyoto Prize from the Inamori Foundation. The prize carries a cash award of 50 million yen (approximately US\$625,000). Cahn is a pioneer in materials science whose work has a significant mathematical component. He has made seminal contributions to the understanding of the thermodynamics and kinetics of phase transformation. Together with John Hilliard, Cahn developed a method to describe the process of phase separation, and the resulting Cahn-Hilliard equation has since played a key role in materials science and engineering. Cahn established a theory of three-dimensional spinodal decomposition by extending the one-dimensional theory formulated by Mats Hillert in 1961. Cahn is also well known for his discovery, along with Shechtman, Blech, and Gruber, of quasicrystals. Cahn's work has had an impact in mathematics, and he has collaborated with several mathematical scientists, notably Jean E. Taylor, with whom he investigated questions about minimal surfaces and crystals. Cahn is on the staff of the National Institute of Standards and Technology (NIST) and is an affiliate member in the physics department at the University of Washington.

—Allyn Jackson

Håstad Awarded Gödel Prize

JOHAN T. HÅSTAD, Royal Institute of Technology, Stockholm, was awarded the 2011 Gödel Prize of the Association for Computing Machinery at the ACM Symposium on the Theory of Computing (STOC) held at the Federated Computing Research Conference (FCRC), June 7, 2011, in San Jose, California. The prize carries a cash award of US\$5,000.

Håstad was honored for his paper “Some optimal inapproximability results”, published in the *Journal of the ACM*, **48**, 798–859, 2001. The prize citation reads:

“This is a landmark paper in computational complexity, specifically, the study of approximation properties of

NP-hard problems. It improves on the PCP Theorem (recognized in a previous prize in 2001) to give novel probabilistic verifiers that can check membership proofs for NP languages while reading very few bits in them—as little as 3 bits. The existence of such verifiers implies that existing approximation algorithms for several problems such as MAX-3SAT cannot be improved if P is different from NP. In other words, there is a ‘threshold’ approximation ratio which is possible to achieve in polynomial time, but improving upon which is NP-hard. Before this paper such ‘optimal’ inapproximability results seemed beyond reach. The Fourier analytic techniques introduced in this paper have been adapted in dozens of other works and are now taught in graduate courses in computational complexity. They also directly influenced subsequent work, such as the formulation of the unique games conjecture for proving further optimal inapproximability results, and lower bounds for geometric embeddings of metric spaces.”

The 2011 Gödel Prize committee consists of Sanjeev Arora (Princeton University), Josep Diaz (Universitat Politècnica de Catalunya), Cynthia Dwork (Microsoft Research), Mogens Nielsen (University of Aarhus), Mike Paterson (University of Warwick), and Eli Upfal (Brown University). 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 Association for Computing Machinery (ACM-SIGACT). The award is presented annually, with the presentation taking place alternately at the International Colloquium on Automata, Languages, and Programming (ICALP) and the ACM Symposium on Theory of Computing (STOC). The prize is named in honor of Kurt Gödel in recognition of his major contributions to mathematical logic and of his interest, discovered in a letter he wrote to John von Neumann shortly before von Neumann's death, in what has become the famous “P versus NP” question.

—Elaine Kehoe

Shi Awarded ICTP Ramanujan Prize

YUGUANG SHI of the School of Mathematical Sciences, Peking University, has been awarded the 2010 Ramanujan Prize of the International Centre for Theoretical Physics (ICTP).

The prize recognizes Shi's "outstanding contributions to the geometry of complete (noncompact) Riemannian manifolds, specifically the positivity of quasi-local mass and rigidity of asymptotically hyperbolic manifolds." It also recognizes his substantial contributions to mathematics in China. Immediately following the award ceremony, Shi gave a presentation on "Some geometry problems related to general relativity", based on his current research interest in differential geometry and its relation to general relativity.

The Ramanujan Prize, established in 2005, is awarded annually to a young mathematician (under age forty-five) from a developing country. The prize is funded by the Norwegian Academy of Science and Letters through the Abel Fund, with the cooperation of the International Mathematical Union (IMU). The ICTP awards the prize through a selection committee in conjunction with the International Mathematical Union (IMU). The members of the committee were Ramadas Ramakrishnan (chair), Wilfrid Gangbo, Helge Holden, Gang Tian, and Marcelo Viana.

—From an Abel Prize announcement

McMullen and Wellner Receive Humboldt Research Awards

CURTIS T. MCMULLEN of Harvard University and JON A. WELLNER of the University of Washington have been awarded Humboldt Research Awards in recognition of lifetime achievements in research. The awardees are invited to carry out research projects of their own choice in cooperation with specialist colleagues in Germany.

—Elaine Kehoe

AWM Essay Contest Winners Announced

The Association for Women in Mathematics (AWM) has announced the winners of its 2011 essay contest, "Biographies of Contemporary Women in Mathematics".

The grand prize was awarded to STEPHANIE WENCLAWSKI of John F. Kennedy High School in Cedar Rapids, Iowa, for her essay "Mrs. Nan Mattai: More Than a Parking Spot". This essay won first place in the high school level category and will be published in the *AWM Newsletter*.

First place in the undergraduate level category went to JARAMI BOND of Heritage Christian Academy in Zebulon, North Carolina, for her essay "The Masterpiece". First place

in the middle school level category was awarded to SOPHIA MARUSIC of Wydown Middle School in St. Louis, Missouri, for her essay "The Square Dancing Market Researcher".

—From an AWM announcement

Mathematical Sciences Awards at the 2011 ISEF

The 2011 Intel International Science and Engineering Fair (ISEF) was held May 8–13, 2011, in Los Angeles, California. More than fifteen hundred students in grades 9 through 12 from sixty-five countries, regions, and territories participated in the fair. The Society for Science and the Public, in partnership with the Intel Foundation, selects a Best in Category contestant, who receives a cash award of US\$5,000. The student chosen this year was MATTHEW RUSSEL BAUERLE, a seventeen-year-old homeschooled student from Fenton, Michigan, for his project "Reformulating the Newton direction computation as a linear least squares problem for smoothed overdetermined $L1$ functionals". Bauerle also received a First Award, which carries a cash prize of US\$3,000. In addition, a grant of US\$1,000 was given to his school. Other award winners were the following.

First Award: ALLEN YUAN, seventeen, Detroit Country Day School, Beverly Hills, Michigan, for "Linearly many faults in (n,k) -star graphs". Second Award (US\$1,500): AISHWARYA ANANDA VARDHANA, sixteen, Jesuit High School, Portland, Oregon, "A novel implementation of the elliptic curve method, stage 2: Using Weierstrass and Edwards elliptic curves for faster factorization"; MANOSIJ G. DASTIDAR, eighteen, South Point High School, Kolkata, India, "Integer partitions and sequences"; and SIMANTA GAUTAM, fifteen, Albemarle High School, Charlottesville, Virginia, "On the patterns existing among carousel primes in base n ". Third Award (US\$1,000): KATE A. GESCHWIND, sixteen, Mayo High School, Rochester, Minnesota, "Developing analytical approaches to forecast wind farm production, phase II"; WENYU CAO, eighteen, Phillips Academy, Andover, Massachusetts, "On the second eigenvalue and expansion of bipartite regular graphs"; AARON L. ZWEIG, fourteen, Randolph High School, Randolph, New Jersey, "Properties of Hawkins primes"; PRATHEEK NAGARAJ, seventeen, Marjory Stoneman Douglas High School, Parkland, Florida, "Method of optimizing the Monte Carlo statistical algorithm to increase computational efficiency in multidimensional integration"; ANIRUDH PRABHU, sixteen, West Lafayette Junior-Senior High School, West Lafayette, Indiana, "Lower bounds for odd perfect numbers".

—From an ISEF announcement

Royal Society of London Elections

The following mathematical scientists have been elected to the Royal Society of London: BÉLA BOLLOBÁS, Trinity College Cambridge and University of Memphis; STEFFEN LAURITZEN, Oxford University; JAMES MCKERNAN, Massachusetts Institute of Technology; and SIMON TAVARÉ, University of Cambridge. Elected as a foreign fellow was MIKHAIL GROMOV, IHES.

—From a Royal Society announcement

AMS Menger Awards at the 2011 ISEF

The 2011 Intel International Science and Engineering Fair (ISEF) was held May 8–13, 2011, at the Los Angeles Convention Center in Los Angeles, California. In this sixty-first year of the ISEF competition more than 1,500 students in grades nine through twelve from sixty-five countries participated in the world's largest precollege science research competition. Student finalists who compete at the ISEF go through a multi-step process to qualify and have won an all-expense-paid trip to the fair. They qualify 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, nearly seventy federal agencies and professional and educational organizations, including the American Mathematical Society (AMS), participated by giving special awards. Prizes given by the AMS included cash, certificates, AMS tote bags, and a booklet about Karl Menger given to each award winner.

For the AMS this was the twenty-third year of participation and it was the twenty-first year of the presentation of the Karl Menger Awards. The members of the 2010–2011 AMS Menger Prize Committee and AMS Special Awards Judges were Greg Fasshauer, Illinois Institute of Technology (chair); Ed Connors, University of Massachusetts; and Jonathan King, University of Florida. The panel of judges initially reviewed all sixty-one projects in mathematics as well as mathematically oriented projects in computer science, physics, and engineering. From these entries they selected a subset of students which were interviewed for further consideration for a Menger Prize. The AMS gave awards to one first-place winner, two second-place winners, four third-place winners, and honorable mentions to five others.

The Karl Menger Memorial Prize winners for 2011 are as follows:

First Place Award (US\$1,000): MANOSIJ G. DASTIDAR, South Point High School, Kolkata, India, “Integer Partitions and Sequences”.

Second Place Awards (US\$500): JOHN TILLA PARISH IV, home schooled, Colorado Springs, Colorado, “On the Verge of Where It Wasn’t: A Multiple Model Approach to Estimation and Tracking Using Extended Kalman Filtering and Intelligent Selection of Integrated Models”; and



AMS Menger Awards. Back row, left to right: Greg Fasshauer (judge), Jonathan F. Li, John Tilla Parish IV, Tzu-Hsuan Su. Front (l-r): Anirudh Prabhu, Benjamin Jerome Kraft, Vasily Sergeevich Bolbachan, Manosij G. Dastidar.

TZU-HSUAN SU, Taipei Municipal Jianguo High School, Taipei City, Chinese Taipei, “Perfect Tiling of a Rectangle into Rectangles”.

Third Place Awards (US\$250): VASILY SERGEEVICH BOLBACHAN, Advanced Science and Education Center—A. N. Kolmogorov School, Moscow, Moscow Region, Russia, “Rational Approximants for Euler-Gompertz Constant”; BENJAMIN JEROME KRAFT, Liberty High School, Bethlehem, Pennsylvania, “Entries of Random Matrices”; JONATHAN F. LI, St. Margaret’s Episcopal School, San Juan Capistrano, California, “Effects of Cell Compressibility, Motility, and Contact Inhibition on the Growth of Tumor Cell Clusters”; ANIRUDH PRABHU, West Lafayette Junior-Senior High School, West Lafayette, Indiana, “Lower Bounds for Odd Perfect Numbers”.

Honorable Mention Awards: RYAN THOMAS BAKER, Hillcrest High School, Midvale, Utah, “Modeling Wind Power Generation Using Polynomial Chaos Expansion”; REBECCA CHEN, Park Tudor School, Indianapolis, Indiana, “Braid Group Representations and Braiding Quantum Gates”; KATE ALEXANDRA GESCHWIND, Mayo High School, Rochester, Minnesota, “Developing Analytical Approaches to Forecast Wind Farm Production, Phase II”; GEORGIY VLADIMIROVICH KOLYSHEV, Stuyvesant High School, New York, New York, “Toward Solution of Soifer-Erdos Problems”; AARON LAWRENCE ZWEIG, Randolph High School, Randolph, New Jersey, “Properties of Hawkins Primes”.

Fifty-one individual students and ten two- or three-member teams from fourteen different countries competed in the mathematics category with fifty-one of the participants being male and twenty-one female. The panel of judges was impressed by the quality, breadth, and originality of the work, and the dedication and enthusiasm of the students. As indicated by the titles of the award-winning projects listed above, the student research covered a wide range of topics. Jonathan F. Li (Third Place)

and Kate Alexandra Geschwind (Honorable Mention) were the only 2011 winners who also won in 2010. This year's youngest winner was Aaron Lawrence Zweig (14, Honorable Mention).

The Society for Science and the Public (<http://www.societyforscience.org/>), a nonprofit organization based in Washington, D.C., owns and has administered the ISEF since 1950. Intel became the title sponsor of ISEF in 1996. The Intel ISEF is the premiere science competition in the world and annually provides a forum for more than 1,500 high school students from sixty-five countries, regions and territories. The 2012 Intel ISEF finals will be held May 13–18 in Pittsburgh, Pennsylvania.

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. The income from the donation by the Menger family covers less than the amount of the awards. The balance, including the travel expenses of the judges, comes from the AMS's general fund. For more information about this program or to make contributions to this fund contact the AMS Development Office, 201 Charles Street, Providence, RI, 02904-2294 or send email to development@ams.org, or phone 401-455-4103.

—Greg Fasshauer,
Professor of Applied Mathematics,
Illinois Institute of Technology

Lincoln K. Durst (1924–2011)

Lincoln Kearney Durst, a former AMS executive staff member and *Notices* managing editor, died on June 2, 2011. He was eighty-six and had lived in Barrington, Rhode Island, since 1970. The cause of death was Alzheimer's disease, from which he had suffered for several years.

Born in Santa Monica, California, on August 5, 1924, Durst received his undergraduate degree in 1945 from the University of California at Los Angeles and his Ph.D. in mathematics in 1952 from the California Institute of Technology. His doctoral advisor was Morgan Ward, and the title of his dissertation was *Apparition and Periodicity Problems of Equianharmonic Divisibility Sequences*. Durst was on the faculty of Rice University from 1951 to 1967 and then at the Claremont Colleges from 1967 to 1970. From 1970 to 1985 he was deputy executive director of the AMS, where he was for many years the managing editor of the *Notices*. The Society staff particularly appreciated his intelligence, kindness, and sense of humor.

The author of a calculus text, *The Grammar of Mathematics* (1969), Durst was also active in the Mathematical Association of America; in particular, in 1966 and 1967 he took leave from Rice to serve as associate director and then executive director of the MAA's Committee on the Undergraduate Program in Mathematics, which was then located in Berkeley. In addition, he participated in several summer writing sessions of the School Mathematics Study Group, the project that in the 1960s and 1970s led to the so-called "new math" educational reforms.

—Allyn Jackson

John Osborn (1936–2011)

We are very sorry to report that John Osborn, emeritus professor of mathematics at the University of Maryland, College Park, passed away on May 30, 2011, due to complications of surgery. He was an exemplary colleague, scholar, and friend.



John Osborn

John's research concerned finite element methods, with particular emphasis on eigenvalue problems. He was a leader in introducing computational methods into undergraduate mathematics courses. He also made considerable contributions to the University of Maryland in his leadership as mathematics department chair and college dean.

He leaves behind his wife Janice, three children, and eight grandchildren.

John's friends echo the sentiments in the eulogy given by Ron Lipsman: "All of you who knew John well will understand me when I say that when it came to compassion, empathy, courtesy, and grace, John was in a class by himself. All of us were truly blessed to have experienced his kindness, his loyalty, his understanding, and his love."

A memorial fund in John's name is being established in the University of Maryland Foundation.

—Ricardo H. Nochetto and Dianne O'Leary,
University of Maryland, College Park

(Photograph by Jim Yorke (yorke@umd.edu))