
Mathematics People

Eelbode Awarded Clifford Prize

DAVID EELBODE of the University of Antwerp has been selected as the recipient of the second W. K. Clifford Prize “for his outstanding mathematical research achievements in the fields of harmonic and Clifford analysis with applications in theoretical physics.” According to the prize citation, he has “a beautiful and remarkable publishing record with papers in pure mathematics and theoretical physics journals. Often cooperating with mathematics centers of excellence around the world, he is a real ambassador for mathematics through Clifford algebra, Clifford analysis and group representation theory. His chief contribution has to be situated within the subject of higher spin operators: these are generalizations of the classical Dirac operator from quantum mechanics, which can be used to model the equations describing higher spin elementary particles. The use of Clifford analysis techniques hereby has the advantage that the resulting function theory can be studied in orthogonal spaces of any dimension and any signature. This topic is also intimately connected to the representation theory for both the conformal Lie algebra and certain transvector algebras.” Eelbode received his Ph.D. from Ghent University with a thesis titled “Clifford analysis on the hyperbolic unit ball.” He will deliver the W. K. Clifford Prize Lecture at the University College London in November 2014.

The International Conference on Clifford Algebras and Their Applications in Mathematical Physics (ICCA) awards the Clifford Prize for excellence in research in theoretical and applied Clifford algebras and their analysis and geometry. The ICCA international conferences, organized alternately in Europe and the Americas, are intended to bring together the leading scientists and young researchers in the field of Clifford algebras and their various applications in mathematics, physics, engineering, and other applied sciences. W. K. Clifford is best remembered for what is now termed geometric algebra, a special case of the Clifford algebras named in his honor, but he also contributed significantly to other branches of mathematics, especially geometry. The prize is intended for young researchers up to age thirty-five and carries a cash award of 1,000 euros (approximately US\$1,450). The first Clifford Prize was awarded to Hendrik De Bie, Ghent University.

The international W. K. Clifford Prize Committee included V. Abramov (Estonia), P. Anglès (France), E. Bayro-Corrochano (Mexico), R. Da Rocha (Brazil), H. De Bie (Belgium), K. Gürlebeck (Germany), D. Hildenbrand (Germany), T. Qian (China), I. Sabadini (Italy),

V. Soucek (Czech Republic), S. Staples (United States), and F. Brackx (Belgium, nonvoting secretary).

—Fred Brackx,
Ghent University, Belgium

Spohn Awarded Cantor Medal

HERBERT SPOHN of the Technical University of Munich (TUM) has been awarded the 2014 Cantor Medal of the German Mathematical Society (DMV). According to the prize citation, Spohn’s insights have had a decisive impact on the development of stochastic analysis and the theory of kinetic equations and on mathematical physics. He received his Ph.D. in 1975 from the University of Munich and is currently professor of applied probability theory at TUM. He was awarded the Dannie Heineman Prize for Mathematical Physics in 2011. The Cantor Medal is awarded at most every two years and carries a cash award of 4,000 euros (approximately US\$5,400).

—From a DMV announcement

2014 Gödel Prize Awarded

Three researchers in computer science have been awarded the 2014 Gödel Prize of the Association for Computing Machinery (ACM) Special Interest Group on Algorithms and Computation Theory (SIGACT), together with the European Association for Theoretical Computer Science (EATCS). RONALD FAGIN of IBM Research, AMNON LOTEM, an algorithms and technologies expert in the Israeli high-tech industry, and MONI NAOR of the Weizmann Institute of Science were honored for their paper “Optimal aggregation algorithms for middleware”, which introduced the powerful “threshold algorithm” that is widely used in applications and systems that demand optimal results for gathering multisourced information. The prize citation reads: “Their paper provides a framework to design and analyze algorithms where aggregation of information from multiple data sources is needed, such as in information retrieval and machine learning. The threshold algorithm’s elegant mathematical properties and simplicity are particularly suitable for use in middleware, software that is often used to augment computer operating systems that support complex, distributed applications. The authors also introduced the notion of instance optimality, an extremely strong guarantee of performance, and showed that the threshold algorithm is instance optimal. The paper’s groundbreaking results have built a foundation for much follow-on research.”

The Gödel Prize includes an award of US\$5,000 and is named in honor of Kurt Gödel, who was born in Austria-

Hungary (now the Czech Republic) in 1906. Gödel's work has had immense impact upon scientific and philosophical thinking in the twentieth century. The award recognizes his major contributions to mathematical logic and the foundations of computer science.

—From an ACM announcement

Mkrtchyan Awarded Emil Artin Junior Prize

SEVAK MKRTCHYAN of Carnegie Mellon University has been awarded the 2014 Emil Artin Junior Prize in Mathematics. Mkrtchyan was chosen for his paper “Entropy of Schur-Weyl measures,” *Annales de l'Institut Henri Poincaré, Probabilités et Statistiques* 50 (2014), 678–713. Established in 2001, the Emil Artin Junior Prize in Mathematics carries a cash award of US\$1,000 and is presented usually every year to a student or former student of an Armenian educational institution under the age of thirty-five for outstanding contributions to algebra, geometry, topology, and number theory—the fields in which Emil Artin made major contributions. The prize committee consisted of A. Basmajian, Y. Movsisyan, and V. Pambuccian.

—Victor Pambuccian, *New College, Arizona State University*

EMS Monograph Award Announced

The European Mathematical Society (EMS) has instituted the EMS Monograph Award, to be given every two years to the author(s) of a monograph in any area of mathematics that is judged by the selection committee to be an outstanding contribution to its field. In the inaugural year of 2014, the recipients of the EMS Monograph Awards are PATRICK DEHORNOY (Université de Caen), FRANÇOIS DIGNE (Université de Picardie Jules-Verne), EDDY GODELLE (Université de Caen), DAAN KRAMMER (University of Warwick), and JEAN MICHEL (Université Denis Diderot, Paris 7) for their joint work “Foundations of Garside Theory” and to AUGUSTO C. PONCE (Université Catholique de Louvain) for his work “Elliptic PDEs, Measures and Capacities: From the Poisson Equation to Nonlinear Thomas-Fermi Problems.” The prize carries a cash award of 10,000 euros (approximately US\$13,600). The winning monographs will be published by the EMS Publishing House in the series “EMS Tracts in Mathematics.”

—From an EMS announcement

AMS Menger Awards at the 2014 ISEF

The 2014 Intel International Science and Engineering Fair was held May 11–16 in Los Angeles, California. This year more than 1,700 high school students in grades

nine through twelve from more than seventy countries, regions, and territories participated in the world's largest precollege science research competition. The first fair was held in Philadelphia in 1950. In 1958, the fair became international when Japan, Canada, and Germany joined the competition.

Student finalists who competed at this year's ISEF went through a multistep process to qualify and won all-expenses-paid trips 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, more than sixty 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-sixth year of participation, and it was the twenty-fourth year of the presentation of the Karl Menger Awards. The Menger Awards Committee consisted of Mihai Stoiciu, Williams College (Chair), John Milton, The Claremont Colleges, and Daniel Dugger, University of Oregon. The judges initially reviewed all projects in mathematics, as well as a number of mathematically oriented projects in computer science, physics, and engineering. From these entries they selected a subset of students who were interviewed for further consideration for Menger Prizes. 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 2014 are listed below, along with each student's high school and project title.

First Place Award (US\$1,000): NITYA MANI, Harker School, San Jose, California, “Characterizing the n -division points of genus-0 curves through straightedge and compass constructions.”

Second Place Awards (US\$500): KEVIN K. LEE, University High School, Irvine, California, “Strongly coupling the electrical and mechanical dynamics of the heartbeat in a diffuse interface model”; SARAH L. SHADER, Laramie High School, Laramie, Wyoming, “Weighted Catalan numbers and their divisibility properties.”

Third Place Awards (US\$250): SHAHAR SILBERSTEIN, Makif Alef, Be'er Sheva, Israel, “Hidden secrets in Cevian triangles”; RITESH N. RAGAVENDER, South Brunswick High School, Monmouth Junction, New Jersey, “Odd Dunkl operators and nilHecke algebras”; RAYNA D. GADZHEVA, Mathematical High School “Konstantin Velichkov”, Pazardzhik, Bulgaria, “Covering squares of side length $n + e$ with unit squares”; PAUL CLARKE, St. Paul's College, Raheny, Dublin, Ireland, “On the Hamiltonicity of cubic, polyhedral, bipartite graphs.”

Honorable Mention Awards: BERTRAND A. STONE, Nicolet High School, Glendale, Wisconsin, “Characterization of the line complexity of cellular automata generated by polynomial transition rules”; KATHERINE M. WEBB, Tabb High School, Yorktown, Virginia, “A new statistical measure of effect size: Rate-adjusted standardized mean difference (RASMD)”; RISHI S. MIRCHANDANI, Fox Chapel Area Senior



Photo: IML Photography/Society for Science & the Public.

2014 Menger Award winners: Back row, left to right: Rayna Gadzheva, Nitya Mani, Paul Clarke, Mihai Stoiciu (chair, Menger Committee). Front row, left to right: Sarah Shader, Ritesh Ragavender, Kevin Lee, Shahar Silberstein.

High School, Pittsburgh, Pennsylvania, “The impact of demand elasticity on the Downs-Thomson and Braess paradoxes”; NIKOLAI MOSTOVSKII, Laboratory for Continuous Mathematical Education, St. Petersburg, Russian Federation, “Cohomology of finite groups without homological algebra”; ATA A. USLU and HAMDI G. OZMENEKSE, Edirne Suleyman Demirel Fen Lisesi, Edirne, Turkey, “Bracelet problem with identical beads.”

The Society for Science and the Public (<http://www.societyforscience.org/>), a nonprofit organization based in Washington, DC, owns and has administered the ISEF since 1950. It was first sponsored by Westinghouse and then, since 1998, by Intel.

The AMS’s participation in ISEF is supported in part by income from the Karl Menger Fund, which was established by the family of the late Karl Menger (<http://www.ams.org/profession/prizes-awards/ams-awards/menger-award>). 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, send email to development@ams.org, or phone 401-455-4103.

—AMS announcement

Mathematical Sciences Awards at ISEF

The 2014 Intel International Science and Engineering Fair was held May 11–16 in Los Angeles, California. 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 in the Mathematical Sciences category was LENNART J. KLEINWORT, fifteen, of Friedrich-Koenig-Gymnasium, Wurzburg, Germany, for his project “Dynamic mathematics on smartphones and tablets.” Kleinwort also received a First Award, which carries a cash prize of US\$3,000. He was also chosen as a recipient of

the Intel Foundation Young Scientist Award of US\$50,000. His school was awarded a grant of US\$1,000. More award winners and the titles of their projects follow.

First Award (US\$3,000): RITESH N. RAGAVENDER, South Brunswick High School, Monmouth Junction, New Jersey, “Odd Dunkl operators and nilHecke algebras”; LENNART J. KLEINWORT, Friedrich-Koenig-Gymnasium, Wurzburg, Germany, “Dynamic mathematics on smartphones and tablets.”

Second Award (US\$1,500): ARANKA HRUSKOVA, Gymnazium Christiana Dopplera, Prague, Czech Republic, “Continued fractions of quadratic numbers”; JESSE M. MICHEL, Massachusetts Academy of Math and Science at Worcester Polytechnic Institute, Worcester, Massachusetts, “Base 1.5: Analysis of properties and relation to the Collatz conjecture”; RUMEN R. DANGOVSKI, Sofia High School of Mathematics, Sofia, Bulgaria, “On the lower central series of PI-algebras.”

Third Award (US\$1,000): OLEKSANDR TYTOV, School-Lyceum #3 named after A. S. Makarenko, Simferopol, Ukraine, “Facility location problems and non-Leibniz analysis on complex plane”; RAYNA D. GADZHEVA, Mathematical High School “Konstantin Velichkov”, Pazardzhik, Bulgaria, “Covering squares of side length $n + e$ with unit squares”; RISHI S. MIRCHANDANI, Fox Chapel Area Senior High School, Pittsburgh, Pennsylvania, “The impact of demand elasticity on the Downs-Thomson and Braess paradoxes”; JOSHUA A. RHODES, Saginaw Arts and Sciences Academy, Saginaw, Michigan, “Functional equations: Rational functions and their matrix isomorphism”; NIKOLAI MOSTOVSKII, Laboratory for Continuous Mathematical Education, St. Petersburg, Russian Federation, “Cohomology of finite groups without homological algebra.”

Fourth Award (\$500): KUAN-YU WANG, San Min Junior High School, Kaohsiung, Chinese Taipei, “A rational story of pi: From asymmetrical cut to weighted average”; Shreya Mathur, Oxford High School, Oxford, Mississippi, “Identification of the impact of obesity treatments on gene expression using a novel statistical test”; NIRANJAN BALACHANDAR, Texas Academy of Mathematics and Science, Denton, Texas, “A Monte Carlo protein folding simulation using energy optimization with novel applications to Alzheimer’s disease research”; PREM M. TALWAI, Mira Loma High School, Sacramento, California, “An investigation of the p53 ubiquitin-proteasome system using a novel non-steady-state enzyme kinetic model”; NITYA MANI, Harker School, San Jose, California, “Characterizing the n -division points of genus-0 curves through straight-edge and compass constructions”; ADILSULTAN LEPES, Republican Physics and Mathematics School named after O. Zhautikov, Almaty, Kazakhstan, “Alternative proof of 100 inequalities: Method of separating tangents”; and KRISHAN S. KUMAR, Terre Haute South Vigo High School, Terre Haute, Indiana, “Explaining the map and the matrix of the discrete Lambert exponentiation.”

—From an ISEF announcement