

# Mathematics People

## Bañuelos Awarded Blackwell-Tapia Prize

RODRIGO BAÑUELOS of Purdue University has been awarded the 2004 Blackwell-Tapia Prize. His research focuses on probability and its connections to harmonic analysis, partial differential equations, spectral theory, and geometry.

The prize, which honors David Blackwell and Richard A. Tapia, is presented every two years to a mathematical scientist who has contributed significantly to his or her field of expertise and who has served as a role model for mathematical scientists and students from underrepresented minority groups or has contributed in other significant ways to addressing the problem of the underrepresentation of minorities in mathematics. The prize amount, contributed this year by Cornell University, is \$3,000. The prize is cosponsored by the Mathematical Sciences Research Institute (MSRI), the Institute for Pure and Applied Mathematics (IPAM), and Cornell University, with additional support from Arizona State University.

The organizing committee for the 2004 prize consisted of Carlos Castillo-Chavez (Arizona State University and Cornell University), Mark Green (IPAM), William Massey (Princeton University), Robert Megginson (MSRI), and Richard Tapia (Rice University).

—Mark Green, *Institute for Pure and Applied Mathematics*

## Clay Research Award Winners Announced

The Clay Mathematics Institute (CMI) has announced the recipients of the 2004 Clay Research Awards. The awards, which recognize major research breakthroughs, were presented to BEN GREEN of Trinity College, Cambridge, and to GÉRARD LAUMON and BAO-CHAU NGO, both of the Université Paris-Sud and the Centre Nationale de Recherche Scientifique (CNRS).

Green was recognized for his joint work with Terence Tao on arithmetic progressions of prime numbers. These are equally spaced sequences of primes such as 31, 37, 43 or 13, 43, 73, 103. Results in the area go back to the work of Lagrange and Waring in the 1770s. A breakthrough came in 1939 when the Dutch mathematician Johannes van der Corput showed that there are an infinite number of three-term arithmetic progressions of primes. Green and Tao showed that for any  $n$  there are infinitely many  $n$ -term progressions of primes. Their proof, which relies on results of Szemerédi (1975) and of Goldston and Yıldırım (2003), uses ideas from combinatorics, ergodic theory, and the theory of pseudorandom numbers. The Green-Tao result is a major advance in our understanding of the primes.

Laumon and Ngô were recognized for their proof of the fundamental lemma for unitary groups. The lemma is a conjectured identity between orbital integrals for two groups, for example, the unitary groups  $U(n)$  and  $U(p) \times U(q)$ , where  $p + q = n$ . Combined with the Arthur-Selberg trace formula, it enables one to prove relations between automorphic forms on different groups and is a key step toward proving links between certain automorphic forms and Galois representations. This is one of the aims of the Langlands program, which seeks a far-reaching unification of ideas in number theory and representation theory. The result of Laumon and Ngô uses the equivariant cohomology approach introduced by Goresky, Kottwitz, and MacPherson, who proved the lemma in the split and equal valuation case. The proof for the unitary case, which is significant for applications, requires many new ideas, including Laumon's deformation strategy and Ngô's purity result, which is based on a geometric interpretation of the endoscopy theory of Langlands and Kottwitz in terms of the Hitchin fibration.

Green was named a Clay Research Fellow for a term of two years. Laumon and Ngô were named Clay Research Scholars for a period of one year. Each awardee received a bronze replica of the CMI icon by sculptor Helaman Ferguson. Former recipients of the Clay Research Award are Andrew Wiles, Laurent Lafforgue, Alain Connes,

Stanislav Smirnov, Edward Witten, Oded Schramm, Manindra Agrawal, Richard Hamilton, and Terence Tao.

Ben Green was born in 1977 in Bristol, England. He was educated at Trinity College, Cambridge, first as an undergraduate and later as a research student of Fields Medalist Timothy Gowers. Since 2001 he has been a Fellow of Trinity College, and in that time he has made extended research visits to Princeton University, the Rényi Institute in Budapest, the University of British Columbia, and the Pacific Institute of Mathematics (PIMS), where he was a postdoctoral fellow. In January 2005 he will take up a chair in pure mathematics at the University of Bristol.

Gérard Laumon, born in 1952, received his *Thèse d'État* from the Université de Paris-Sud, Orsay, in 1983 under the direction of Luc Illusie. In 1987 Laumon was awarded the Silver Medal of CNRS. In 1992 he was awarded the E. Dechelle Prize of the French Academy of Sciences.

Bao-Châu Ngô, born in 1972 in Hanoi, Vietnam, received his Ph.D. at the Université de Paris-Sud, Orsay, in 1997 under the direction of Gérard Laumon. He has held visiting positions at the Max Planck Institute in Bonn, the Universities of Toronto, Sydney, and Chicago, and the Institut des Hautes Études Scientifiques. He has held a CNRS position at the Université de Paris 13 since 1998, and he assumed a professorship at the Université de Paris-Sud in the fall of 2004.

—From a CMI announcement



**Friedrich Hirzebruch**

## Hirzebruch Awarded Cantor Medal

The Deutsche Mathematiker Vereinigung (DMV, German Mathematical Society) has awarded the 2004 Georg Cantor Medal to FRIEDRICH HIRZEBRUCH. The medal was presented during the DMV meeting in Heidelberg in September 2004.

The citation reads: "In recognition of his remarkable achievements the Deutsche Mathematiker Vereinigung bestows the Georg Cantor Medal on Prof. Dr. Friedrich Hirzebruch. With this distinction the DMV honors a mathematician of worldwide reputation whose path-breaking works have substantially furthered mathematics. His ideas and discoveries—particularly in connection with Riemann-Roch theorems, characteristic classes, and K-theory—have contributed to the instigation of one of the most important developments in mathematics in the second half of the 20th century. He has contributed more than anyone else to the international integration of German mathematics and to the absorption of east and west German mathematicians into a common organization."

Friedrich Hirzebruch was born in Hamm, Westphalia, on October 17, 1927. He received his Ph.D. from the

Universität Münster under the direction of H. Behnke and also studied with Heinz Hopf at the Eidgenössische Technische Hochschule in Zürich. After serving as an assistant at the Universität Erlangen, Hirzebruch spent two years (1952–54) at the Institute for Advanced Study in Princeton. After a year in Münster he went to Princeton University for a year. In 1956 he became a professor at the Universität Bonn. Hirzebruch is perhaps most famous for proving what is now known as the Hirzebruch-Riemann-Roch Theorem and for developing the theory of characteristic classes around it. Together with M. F. Atiyah and A. Grothendieck, Hirzebruch was one of the main architects of K-theory. In later years he made significant contributions to the theory of algebraic surfaces and 3-folds. Hirzebruch also had an important influence on the mathematical life in Germany by organizing the famous Arbeitstagung meetings since 1957 and by founding the Max-Planck-Institut für Mathematik in Bonn in 1981. He served as director of that institute until 1995.

—Allyn Jackson

## Izumi Awarded Operator Algebra Prize

MASAKI IZUMI of Kyoto University has been awarded the second Operator Algebra Prize for his outstanding contributions to the theory of subfactors and the classification of automorphisms of  $C^*$ -algebras, and thus to the advancement of operator algebra theory. The prize consists of a cash award of about US\$3,000, a prize certificate, and a medal.

The Operator Algebra Prize was established in 1999 by initiatives and contributions from some senior Japanese researchers in operator algebra theory and related fields to encourage young researchers in these fields. The prize is awarded every four years to a person under forty years of age either of Japanese nationality or principally based in a Japanese institution for outstanding contributions to operator algebra theory and related areas.

—Huzihiro Araki, Kyoto University

## NRC-Ford Foundation Minority Fellowships Awarded

SCOTT IZU of New Mexico State University has been awarded an NRC-Ford Foundation Predoctoral Fellowship for 2004. He is a student in the field of analytical mathematics.

The NRC-Ford Foundation Minority Fellowships programs are administered by the National Research Council for the purpose of increasing the presence of underrepresented groups among faculty members in colleges and universities. The recipients were selected on the basis of merit and promise of future achievement.

—From an NRC announcement

## Papikian Awarded Emil Artin Junior Prize

The 2005 Emil Artin Junior Prize in Mathematics has been awarded to MIHRAN PAPIKIAN of Stanford University. Papikian was chosen for his paper "On the degree of modular parametrizations over function fields", which appeared in the *Journal of Number Theory* 97 (2002), 317–349.

Established in 2001, the Emil Artin Junior Prize in Mathematics carries a cash award of US\$500 and is presented usually every year to a student or former student of an Armenian university who is 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. Previous awardees were Vahagn Mikaelian (2001), Artur Barkhudaryan (2002), and Gurgen Asatryan (2004).

The prize committee consisted of A. Basmajian, Y. Movsisyan, and V. Pambuccian.

—Artin Prize Committee announcement

or graduate students specializing in mathematics and/or computer science) the opportunity to spend a semester in Moscow studying mathematics. The fifteen-week program is similar to the Research Experiences for Undergraduates programs that are held each summer across the United States. Math in Moscow draws on the Russian tradition of teaching mathematics, which emphasizes creative approaches to problem solving and in-depth understanding. All instruction is in English.

Each semester since 2001 the AMS has awarded several scholarships of approximately \$5,000 each for U.S. students to attend the Math in Moscow program. The scholarships are made possible through a grant from the National Science Foundation (NSF). Information about how to apply may be found in the August 2004 issue of the *Notices*, page 805, or on the webpage <http://www.ams.org/careers-edu/mimoscow.html>. For more information about Math in Moscow, consult <http://www.mccme.ru/mathinmoscow> and the article "Bringing Eastern European Mathematical Traditions to North American Students", *Notices*, November 2003, pages 1250–54.

—Allyn Jackson

## DMV Awards Media and Journalism Prizes

In October 2004 in Berlin, the Deutsche Mathematiker Vereinigung (DMV, German Mathematical Society) awarded two prizes recognizing outstanding contributions to raising public awareness of mathematics. The DMV Media Prize was awarded to CHRISTOPH PÖPPE, a writer and editor for the magazine *Spektrum der Wissenschaft*. The DMV Journalist Prize went to HUBERTUS BREUER for his article "Der mit den Falten rechnet" ("He who computes with the folds"), which appeared in the newspaper *Die Zeit*.

The DMV Media Prize of 5,000 euros (approximately US\$6,500) is presented every two years to recognize outstanding activities to popularize mathematics within the general public. The first recipient of the prize was Gero von Randow (2002).

—Allyn Jackson

## Math in Moscow Scholarships Awarded

The AMS has made awards to four undergraduate students to attend the Math in Moscow program in spring 2005. The names of the students and their institutions are: CHRISTOPHER E. BIERMANN, Dartmouth College; BRENDAN MATTHEW CREUTZ, California Polytechnic State University, San Luis Obispo; VICTOR KOSTYUK, Rochester Institute of Technology; JOEL LOUWSMA, University of Michigan; and ADRIENNE RAU, Barnard College/Columbia University.

Math in Moscow is a program of the Independent University of Moscow that offers foreign students (undergraduate