Observations - August 20, 2010

Four winners of the 2010 Fields Medal announced

By John Matson

There is no such thing as the Nobel Prize in Mathematics, but fortunately the field of math dishes out its own top honors every four years, bestowing the prestigious Fields Medal on two to four researchers. (Unfortunately for mathematicians, the cash prize attached to the Nobels is a far sight bigger.)

Four 2010 Fields Medalists were announced August 19 at the International Congress of Mathematicians in Hyderabad, India: Cédric Villani of the Henri Poincaré Institute in Paris, Stanislav Smirnov of the University of Geneva, Ngô Bao Châu of the University of Paris XI, and Elon Lindenstrauss of the Hebrew University of Jerusalem.

Villani was recognized in large part for "his profound mathematical interpretation of the physical concept of entropy, which he has applied to solve major problems inspired by physics," according to a profile on the International Congress of Mathematicians (ICM) Web site.

Smirnov, according to an ICM profile, "gave elegant proofs of two long-standing, fundamental conjectures in statistical physics"— one relating to percolation and one relating to the so-called the Ising model of statistical mechanics, which has applications to magnetism—"finding surprising symmetries in mathematical models of physical phenomena."

Châu, who will assume a faculty appointment at the University of Chicago in September, was lauded for his proof of a proposition known as the Fundamental Lemma. "It is deep, pure mathematics and has relevance to the world, including high-energy physics, computer science and cryptography," Peter Constantin, chair of the University of Chicago math department, said in a prepared statement.

Lindenstrauss, not to be outdone in impenetrable accomplishments, won for his "results on measure rigidity in ergodic theory, and their applications to number theory." Ergodic theory, according to Lindenstrauss's profile, involves the behavior of dynamical systems.

The last batch of Fields Medals, in 2006, drew a great deal of attention when one of the recipients, Russian mathematician Grigory Perelman, refused to accept his prize. He has since refused a $1-million Clay Mathematics Institute prize for his work resolving the long-standing Poincaré Conjecture.

"It was completely irrelevant for me," Perelman told *The New Yorker* in 2006 of his Fields Medal. "Everybody understood that if the proof is correct then no other recognition is needed."

Photo: Stefan Zachow via Wikimedia Commons