Iwaniec, Sarnak, and Taylor Receive Ostrowski Prize

Henryk Iwaniec

Peter Sarnak

Richard L. Taylor

The seventh Ostrowski Prize recognizing outstanding mathematical achievement has been awarded to HENRYK IWANIEC of Rutgers University; PETER SARNAK of Princeton University, the Institute for Advanced Study in Princeton, and Courant Institute at New York University; and RICHARD L. TAYLOR of Harvard University.

The prize carries a monetary award of 150,000 Swiss francs (approximately US$87,000) and three fellowships of 30,000 Swiss francs. The jury, consisting of representatives from the universities of Basel, Jerusalem, and Waterloo and from the academies of Denmark and the Netherlands decided to divide the Ostrowski Prize into three equal parts.

Henryk Iwaniec

Iwaniec's work is characterized by depth, profound understanding of the difficulties of a problem, and unsurpassed technique. He has made deep contributions to the field of analytic number theory, mainly in modular forms on $GL(2)$ and sieve methods. Particularly noteworthy are: his work (with W. Duke and J. Friedlander) on the question of "breaking convexity" for estimates of the growth of L-functions associated to modular forms, and his work (with J. Friedlander) yielding an asymptotic formula for the number of primes up to X that are the sum of a square and of a biquadrate (this is the first time one has been able to prove the existence of infinitely many primes in a prescribed very thin sequence), and his solution of Linnik's problem of the equidistribution of integral points on a two-dimensional sphere as the radius increases.

Peter Sarnak

Sarnak's work is characterized by an extraordinary span of interests and by great originality. His contributions to number theory and to questions of analysis often motivated by number theory have been very influential in mathematics. Particularly significant are: his work (with N. Katz) about universality in spacing of zeros of general L-functions over function fields; his work (with collaborators) on the determination of which integers in a totally real number field are representable by a given positive ternary definite quadratic form, a problem previously viewed as out of reach; and his work on quantum chaos, which indicates that the Laplacian eigenvalues of arithmetic congruence modular curves behave differently from physicists' expectations.

Richard L. Taylor

Taylor has been a major contributor to some of the most spectacular developments in number theory over the last ten years. A particularly fascinating and rewarding theme in number theory has been the application of automorphic forms to arithmetic problems related to l-adic Galois representations. Taylor's extraordinary creativity and impressive technical command of both algebraic geometry and automorphic representation theory allowed him to make deep and profound discoveries in this area. He is best known for his input to the work of A. Wiles, proving the Taniyama-Shimura-Weil conjecture in sufficiently many cases to imply Fermat's Last Theorem. In a series of papers, jointly with Diamond, Conrad and Breuil, Taylor recently completed the proof of that conjecture: every rational elliptic curve is covered by a modular curve. The Taniyama-Shimura-Weil conjecture is an instance of the Global Langlands Program, relating automorphic representations and Galois representations. Another major achievement of Taylor, together with Michael Harris, is the proof of the Local Langlands Conjecture for $GL(n)$, which establishes a similar correspondence over the completions of Q. A third and related series of papers, partly in collaboration with N. Shepherd-Barron and K. Buzzard, concerns a program laid out by Taylor to prove the Artin Conjecture on the holomorphicity of L-functions of certain two-dimensional representations of the Galois group of the rational numbers.

About the Prize

The Ostrowski Foundation was created by Alexander Ostrowski, for many years a professor at the University of Basel. He left his entire estate to the foundation and stipulated that the income should provide a prize for outstanding recent achievements in pure mathematics and the foundations of numerical mathematics. The prize is awarded every other year. Previous recipients of the Ostrowski Prize are Louis de Branges (1990), Jean Bourgain (1992), Miklos Laczkovich (1994), Marina Ratner (1994), Andrew Wiles (1996), Yuri Nesterenko (1998), Gilles Pisier (1998), Alexander Beilinson (2000), and Helmut Hofer (2000).

—Ostrowski Foundation announcement