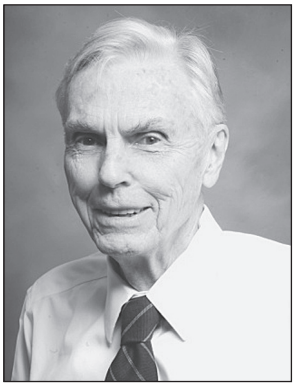
Tate Receives 2010 Abel Prize

The Norwegian Academy of Science and Letters has awarded the Abel Prize for 2010 to JOHN TORRENCE TATE, University of Texas at Austin, for "his vast and lasting impact on the theory of numbers." The Abel Prize recognizes contributions of extraordinary depth and influence to the mathematical sciences and has been awarded annually since 2003. It carries a cash award of 6,000,000 Norwegian kroner (approximately US$1 million). John Tate received the Abel Prize from His Majesty King Harald at an award ceremony in Oslo, Norway, on May 25, 2010.



John Tate

Biographical Sketch

John Torrence Tate was born on March 13, 1925, in Minneapolis, Minnesota. He received his B.A. in mathematics from Harvard University in 1946 and his Ph.D. in 1950 from Princeton University under the direction of Emil Artin. He was affiliated with Princeton University from 1950 to 1953 and with Columbia University from 1953 to 1954. He joined the faculty of Harvard University in 1954 and remained there for thirty-six years before joining the University of Texas, Austin. He retired from Texas in 2009.

John Tate has received many distinguished international awards and honors. As early as 1956, he was awarded the AMS Cole Prize for outstanding contributions to number theory, and he received the AMS Steele Prize for Lifetime Achievement in 1995. With Mikio Sato he received the 2002/2003 Wolf Prize in Mathematics for "his creation of fundamental concepts in algebraic number theory." He was an invited speaker at the International Congress of Mathematicians in 1962 in Stockholm and again in 1970 in Nice. He was elected to the U.S. National Academy of Sciences in 1969, was named a foreign member of the French Académie des Sciences in 1992, and elected an honorary member of the London Mathematical Society in 1999.

Citation

Beyond the simple arithmetic of 1, 2, 3, … lies a complex and intricate world that has challenged some of the finest minds throughout history. This world stretches from the mysteries of the prime numbers to the way we store, transmit, and secure information in modern computers. It is called the theory of numbers. Over the past century it has grown into one of the most elaborate and sophisticated branches of mathematics, interacting profoundly with other areas such as algebraic geometry and the theory of automorphic forms. John Tate is a prime architect of this development.

Tate's 1950 thesis on Fourier analysis in number fields paved the way for the modern theory of automorphic forms and their L-functions. He revolutionized global class field theory with Emil Artin, using novel techniques of group cohomology. With Jonathan Lubin, he recast local class field theory by the ingenious use of formal groups. Tate's invention of rigid analytic spaces spawned the whole field of rigid analytic geometry. He found a p-adic analogue of Hodge theory, now called Hodge-Tate theory, which has blossomed into another central technique of modern algebraic number theory.

A wealth of further essential mathematical ideas and constructions were initiated by Tate, including Tate cohomology, the Tate duality theorem, Barsotti-Tate groups, the Tate motive, the Tate module, Tate's algorithm for elliptic curves, the Néron-Tate height on Mordell-Weil groups of abelian varieties, Mumford-Tate groups, the Tate isogeny theorem and the Honda-Tate theorem for abelian varieties over finite fields, Serre-Tate deformation theory, Tate-Shafarevich groups, and the Sato-Tate conjecture concerning families of elliptic curves. The list goes on and on.

Many of the major lines of research in algebraic number theory and arithmetic geometry are only possible because of the incisive contribution and illuminating insight of John Tate. He has truly left a conspicuous imprint on modern mathematics.

About the Prize

The Niels Henrik Abel Memorial Fund was established in 2002 to award the Abel Prize for outstanding scientific work in the field of mathematics. The prize is awarded by the Norwegian Academy of Science and Letters, and the choice of Abel Laureate is based on the recommendation of the Abel Committee, which consists of five internationally recognized mathematicians.

Previous recipients of the Abel Prize are: Jean-Pierre Serre (2003), Michael Atiyah and I. M. Singer (2004), Peter Lax (2005), Lennart Carleson (2006), S. R. S. Varadhan (2007), John G. Thompson and Jacques Tits (2008), and Mikhail L. Gromov (2009).

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