

Faltings Awarded Faisal Prize



Gerd Faltings

GERD FALTINGS of the Max-Planck Institute and the University of Bonn, has been awarded the King Faisal Prize for Science for 2014 by the Faisal Foundation. Mathematics was the field selected for the award this year.

According to the prize citations, Faltings “has made groundbreaking contributions to algebraic geometry and number theory. His work combines ingenuity, vision, and technical power. He has introduced stunning new tools and techniques which are now constantly used in modern mathematics. His deep insights into the p -adic cohomology of algebraic varieties

have been crucial to modern developments in number theory. His work on moduli spaces of abelian varieties has had great influence on arithmetic algebraic geometry. He has introduced new geometric ideas and techniques in the theory of Diophantine approximation, leading to his proof of Lang’s conjecture on rational points of abelian varieties and to a far-reaching generalization of the subspace theorem. Faltings has also made important contributions to the theory of vector bundles on algebraic curves with his proof of the Verlinde formula.”

Gerd Faltings was born in Gelsenkirchen, Germany, in 1954. He studied mathematics and physics at the University of Münster and received his Ph.D. in mathematics there in 1978, as well as the habilitation in mathematics in 1981. He has been an assistant professor at the University of Münster, a professor at the University of Wuppertal (1982–1984), and a professor at Princeton University (1985–1996). He is currently a director of the Max-Planck Institute for Mathematics in Bonn.

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Faltings was awarded the Fields Medal in 1986, primarily for his proof of the Mordell conjecture. In 1922 Louis Mordell had conjectured that a system of algebraic equations with rational coefficients that defines an algebraic curve of genus greater than or equal to 2 (a surface with two or more “holes”) has only a finite number of rational solutions that have no common factors. By proving this, Faltings showed that $x^n + y^n = z^n$ could have only a finite number of solutions in integers for $n > 2$, which was a major breakthrough in proving Fermat’s Last Theorem that this equation has no natural number solutions for $n > 2$.

Faltings was the recipient of a Guggenheim Fellowship for Natural Sciences, United States and Canada, in 1988. In 1996, he received the Gottfried Wilhelm Leibniz Prize of the Deutsche Forschungsgemeinschaft, the highest honor awarded in German research.

Faltings’s publications include *Rational Points* (1984), *Degeneration of Abelian Varieties* (with Ching-Li Chai) (1990), and *Lectures on the Arithmetic Riemann-Roch Theorem* (1992).

The King Faisal International Prize is awarded to “scientists and scholars whose research results in significant advances in specific areas that benefit humanity.” The prize consists of a certificate handwritten in Arabic calligraphy summarizing the laureate’s work, a commemorative twenty-four carat gold medal uniquely cast for each prize, and a cash award of 750,000 Saudi riyal (approximately US\$200,000). The science prize is given alternately in mathematics, chemistry, physics, and biology.

— Elaine Kehoe