Lovász Receives Kyoto Prize

LÁSZLÓ LOVÁSZ, director of the Mathematical Institute at Eötvös Loránd University in Budapest, Hungary, and president of the International Mathematics Union, has been awarded the twenty-sixth annual Kyoto Prize for Lifetime Achievement in Basic Sciences. The prize this year focused on the field of mathematical sciences. He was honored for his outstanding contributions to the advancement of both the academic and technological possibilities of the mathematical sciences. He will be presented with the award, which consists of a diploma, a Kyoto Prize medal of twenty-karat gold, and a cash prize totaling 50 million yen (approximately US$550,000). The presentation ceremony will be held at the Kyoto International Conference Center on November 10, 2010. In the Advanced Technology category, the prize goes to medical scientist Shinya Yamanaka, and in the Arts and Philosophy category, to visual artist William Kentridge.

The Work of László Lovász

László Lovász is considered to be one of the world's preeminent contemporary mathematicians. He has provided a link among numerous branches of mathematics through his advanced research on discrete structures. Many of his concrete research results are presented in the form of elucidated properties of graphs and their algorithmic designs. However, his methodologies go beyond the framework of graph theory to exert significant influence on a broad spectrum of mathematical sciences, including discrete mathematics, combinatorial optimization, and theoretical computer science.

Lovász has solved several outstanding problems, including the "weak perfect graph conjecture", a well-known open problem in graph theory, and the famous and long-standing open problem on Shannon capacity in the field of information theory. In this work he introduced quadratic forms to express discrete structures. It has served as the very first instance of semidefinite programming, which went on to become one of the central topics in mathematical optimization. By further advancing those pioneering achievements, he played a role in developing the geometric methodology of algorithms based on the ellipsoid method, which led to the solution of a major open problem on submodular function minimization. His contributions are significant in clarifying the deeper relationship between computation theory and optimization theory.

However, he is perhaps best known for the widely used Lovász local lemma, which provided a fundamental probabilistic tool for the analysis of discrete structures and contributed to the creation of a framework for probabilistically checkable proofs. The basis algorithm, commonly known as the "LLL algorithm", has also contributed to the construction of important algorithms and has become a fundamental tool in the theory of cryptography.

Lovász was born in 1948 in Budapest and is a citizen of both Hungary and the United States. He received his Dr. Math. Sci. degree from the Hungarian Academy of Sciences in 1977 and has held a number of prestigious positions, including professor and chair of geometry at József Attila University (1978–1982), professor and chair of computer science at Eötvös Loránd University (1983–1993), professor of computer science at Yale University (1993–2000), and senior researcher at Microsoft Research (1999–2006). His honors include the George Pólya Prize of the Society for Industrial and Applied Mathematics (1979), the Delbert Ray Fulkerson Prize of the AMS and the Mathematical Programming Society (1982), the Brouwer Medal of the Dutch Mathematical Society (1993), the Bolzano Medal of the Czech Mathematical Society (1998), the Knuth Prize of ACM-SIGACT (1999), the Gödel Prize of ACM-SIGACT-EATCS (2001), and the 1999 Wolf Prize.

About the Prize

The Kyoto Prize is Japan's highest private award for global achievement, honoring significant contributions to the betterment of society. The Inamori Foundation is a nonprofit organization established in 1984 by Kazuo Inamori, founder and chairman emeritus of Kyocera and KDDI Corporation. The activities of the Inamori Foundation reflect the lifelong belief of its founder that a human being has no higher calling than to strive for the greater good of society and that the future of humanity can be assured only when there is a balance between scientific progress and spiritual depth. The Kyoto Prize is presented not only in recognition of outstanding achievements but also in honor of the excellent personal characteristics that have shaped those achievements.

Previous Kyoto Prize winners who have made contributions to the mathematical sciences are: Rudolf E. Kalman (1985), Claude E. Shannon (1985), John McCarthy (1988), I. M. Gelfand (1989), Edward Lorenz (1991), André Weil (1994), Donald E. Knuth (1996), Kyosi Itô (1998), Mikhael Gromov (2002), Simon A. Levin (2005), and Hirotugu Akaike (2006).

—From Inamori Foundation announcements