Gromov Receives 2009 Abel Prize

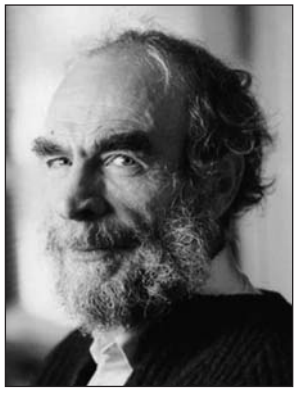

Photo from http://www.abelprisen.no/en/.

Mikhail L. Gromov

The Norwegian Academy of Science and Letters has decided to award the Abel Prize for 2009 to the Russian-French mathematician MIKHAIL L. GROMOV for "his revolutionary contributions to geometry". 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$950,000). Gromov will receive the Abel Prize from His Majesty King Harald at an award ceremony in Oslo, Norway, on May 19, 2009.

Biographical Sketch

Mikhail Leonidovich Gromov was born on December 23, 1943, in Boksitogorsk, USSR. He obtained his master's degree (1965) and his doctorate (1969) from Leningrad University, where he also completed his postdoctoral thesis (1973). He was an assistant professor at Leningrad University from 1967 to 1974.

Since 1982 Gromov has been a permanent professor at the Institut des Hautes Études Scientifiques, Bures-sur-Yvette, France. He has been a French citizen since 1992. He is currently also Jay Gould Professor of Mathematics at the Courant Institute of Mathematical Sciences, New York University.

Gromov has received many distinguished international awards, including the Kyoto Prize in Basic Sciences (2002), the Balzan Prize (1999), the AMS Leroy P. Steele Prize (1997), the Lobatchewski Medal (1997), and the Wolf Prize (1993). He is a foreign member of the U.S. National Academy of Sciences and of the American Academy of Arts and Sciences, and a member of the Académie des Sciences of France.

Citation

Geometry is one of the oldest fields of mathematics; it has engaged the attention of great mathematicians through the centuries but has undergone revolutionary change during the last fifty years. Mikhail Gromov has led some of the most important developments, producing profoundly original general ideas, which have resulted in new perspectives on geometry and other areas of mathematics.

Riemannian geometry developed from the study of curved surfaces and their higher-dimensional analogues and has found applications, for instance, in the theory of general relativity. Gromov played a decisive role in the creation of modern global Riemannian geometry. His solutions of important problems in global geometry relied on new general concepts, such as the convergence of Riemannian manifolds and a compactness principle, which now bear his name.

Gromov is one of the founders of the field of global symplectic geometry. Holomorphic curves were known to be an important tool in the geometry of complex manifolds. However, the environment of integrable complex structures was too rigid. In a famous paper in 1985 he extended the concept of holomorphic curves to J-holomorphic curves on symplectic manifolds. This led to the theory of Gromov-Witten invariants, which is now an extremely active subject linked to modern quantum field theory. It also led to the creation of

More on Gromov in the *Notices*

For more on the work of Mikhail Gromov, see "Encounter with a geometer", by Marcel Berger, which appeared in two parts in the February and March 2000 issues of the *Notices*.

One of Gromov's celebrated discoveries is described in "WHAT IS... a pseudoholomorphic curve?", by Simon Donaldson, in the October 2005 issue of the *Notices*.

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symplectic topology, and gradually penetrated and transformed many other areas of mathematics.

Gromov's work on groups of polynomial growth introduced ideas that forever changed the way in which a discrete infinite group is viewed. Gromov discovered the geometry of discrete groups and solved several outstanding problems. His geometrical approach rendered complicated combinatorial arguments much more natural and powerful.

Mikhail Gromov is always in pursuit of new questions and is constantly thinking of new ideas for solutions of old problems. He has produced deep and original work throughout his career and remains remarkably creative. The work of Gromov will continue to be a source of inspiration for many future mathematical discoveries.

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 by the Abel Committee consisting 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), and John G. Thompson and Jacques Tits (2008).

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