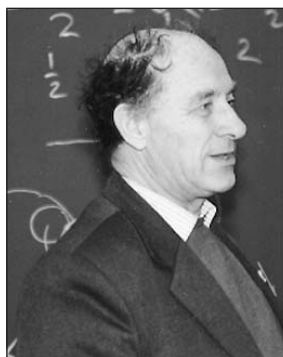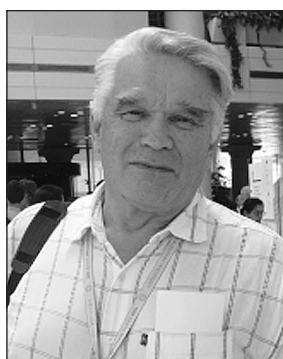# Arnold and Faddeev Receive 2008 Shaw Prize

Vladimir Arnold

Ludwig Faddeev

On June 10, 2008, the Shaw Foundation announced it would award its annual Shaw Prize in Mathematical Sciences to VLADIMIR ARNOLD and LUDWIG FADDEEV "for their widespread and influential contributions to Mathematical Physics". The prize carries a cash award of US$1 million.

The Shaw Prize in Mathematical Sciences committee made the following statement:

"Vladimir Arnold, together with Andrei Kolmogorov and Jürgen Moser, made fundamental contributions to the study of stability in dynamical systems, exemplified by the motion of the planets round the sun. This work laid the foundation for all subsequent developments right up to the present time.

"Arnold also produced extremely fruitful ideas, relating classical mechanics to questions of topology. This includes the famous Arnold Conjecture, which was only recently solved.

"In classical hydrodynamics the basic equations of an ideal fluid were derived by Euler in 1757, and major steps towards understanding them were taken by Helmholtz in 1858 and Kelvin in 1869. The next significant breakthrough was made by Arnold a century later, and this has provided the basis for more recent work.

"Ludwig Faddeev has made many important contributions to quantum physics. Together with Boris Popov he showed the right way to quantize the famous non-Abelian theory which underlies all contemporary work on sub-atomic physics. This led in particular to the work of 't Hooft and Veltman, which was recognized by the Nobel Prize for Physics of 1999.

"Faddeev also developed (jointly with Valentin Pavlov) the quantum version of the beautiful theory of integrable systems in two dimensions, which has important applications in solid state physics as well as in recent models of string theory.

"In another application of the scattering theory of differential operators, Faddeev discovered a surprising link with number theory and the famous Riemann Hypothesis."

Vladimir Arnold, born in 1937 in Odessa, Ukrainian SSR, is presently the chief scientist at the Steklov Mathematical Institute in Moscow and a professor at the Université de Paris Dauphine. He obtained his first degree in 1959 at Moscow State University, was awarded a candidate's degree (equivalent to a Ph.D.) in 1961, and became a professor in 1965. He is a member of the Russian Academy of Sciences.

Ludwig Faddeev, born in 1934 in Leningrad (now St. Petersburg), Russia, is a director of the Euler International Mathematical Institute, Petersburg Department of the Steklov Institute of Mathematics. He graduated from Leningrad State University in 1956 and received his Doctor of Physical and Mathematical Sciences degree in 1963. He has been a professor at Leningrad State University since 1967. During 1986–1990, he served as president of the International Mathematical Union. He is a member of the Russian Academy of Sciences, the U.S. National Academy of Sciences, and the French Academy of Sciences.

The Shaw Prize is an international award to honor individuals who are currently active in their respective fields and have achieved distinguished and significant advances, who have made outstanding contributions in culture and the arts, or who in other domains have achieved excellence. The award is dedicated to furthering societal progress, enhancing quality of life, and enriching humanity's spiritual civilization. Preference is given to individuals whose significant work was recently achieved.

The Shaw Prize consists of three annual awards: the Prize in Astronomy, the Prize in Life Science and Medicine, and the Prize in Mathematical Sciences. Each prize carries a monetary award of US$1 million. Established under the auspices of Run Run Shaw in November 2002, the prize is managed and administered by the Shaw Prize Foundation, based in Hong Kong.

Previous recipients of the Shaw Prize in Mathematical Sciences are Robert Langlands and Richard Taylor (2007), David Mumford and Wen-Tsun Wu (2006), Andrew Wiles (2005), and Shiing-Shen Chern (2004).

—From Shaw Foundation Announcements