

Abel Laureate 2014

by Gonit Sora - Tuesday, April 01, 2014

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Probably, the first thing that comes to the mind of a mathematics student when he hears *Abel* is abelian group. This terminology of the special commutative groups is actually a respect to the legendary mathematician [Niels Henrik Abel](#). The adjective “abelian”, derived from his name, has become so common and important in mathematical writing that it is conventionally spelled with a lower-case initial. Abel was born on 5th August 1802 in Nedstrand Norway. During his short life span, N.H. Abel devoted himself to several topics like solution of algebraic equations by radicals, studied new transcendental functions like elliptic integrals, elliptic functions and abelian integrals. He also worked on functional equations, integral transforms and treated the theory of series in a rigorous way. Unfortunately, owing to his poor health and lack of financial support, Abel could not carry on his mathematical work further into time and left for his heavenly abode on 6th April 1829, at a very young age of only 27 years!

As years passed by, the mathematical community began to feel the importance of Abel's work and The mathematician, Sophus Lie, was one of the first eager proponents of establishing an Abel prize but Lie passed away in February 1899 and the efforts to establish the Abel fund were discontinued. Various other efforts to establish an Abel Prize started during the birth centenary of Abel in 1902 but these could not gain ground. Ultimately, after a long gap of 100 years, during the bicentenary celebration of Abel's birth in the year 2002, the Niels Henrik Abel Memorial Fund was established to award the [Abel Prize](#) for outstanding scientific work in the field of mathematics. The Abel Prize recognizes contributions of extraordinary depth and influence to the mathematical sciences and carries a cash award of NOK 6,000,000 (about 7500,000 Euro or 1 million USD). It was awarded for the first time on 3 June 2003 to Jean-Pierre Serre “for playing a key role in shaping the modern form of many parts of mathematics, including topology, algebraic geometry and number theory”.

Recently on 26th March, the Norwegian Academy of Science and Letters has decided to award the Abel Prize 2014 to [Yakov G. Sinai of Princeton University, USA](#), and the Landau Institute for Theoretical Physics, Russian Academy of Sciences, “for his fundamental contributions to dynamical systems, ergodic theory, and mathematical physics”. Yakov Sinai will receive the Abel Prize from His Royal Highness The Crown Prince at an award ceremony in Oslo on 20th May 2014.

Prof. Sinai, one of the most influential mathematicians of the twentieth century, has achieved numerous ground breaking results in the theory of dynamical systems, in mathematical physics and in probability theory. Many mathematical results have been named after him, including Kolmogorov-Sinai entropy, Sinai's billiards, Sinai's random walk, Sinai-Ruelle-Bowen measures and Pirogov-Sinai theory. He has more than 250 research papers and a good number of books to his credit and has supervised more than 50 Ph.D. students. The Abel Committee says, “His works had and continue to have a broad and profound impact on mathematics and physics, as well as on the ever-fruitful interaction between these two fields.”

Prof. Yakov G. Sinai and his wife Elena B. Vul. They have written several joint papers. Image source: [Wikimedia Commons](#).

Prof. Sinai has received many distinguished international awards. In 2013 he was awarded the Leroy P. Steele Prize for Lifetime Achievement from the American Mathematical Society. Other awards include the Wolf Prize in Mathematics (1997), the Nemmers Prize in Mathematics (2002), the Henri Poincaré Prize from the International Association of Mathematical Physics (2009) and the Dobrushin International Prize from the Institute of Information Transmission of the Russian Academy of Sciences (2009). Prof. Sinai is also a highly respected teacher at Princeton. One of his former students remarks, “It’s quite inspirational to be in his class - People feel an immediate urge to participate - there is a radiance which comes from him and inspires us.”

The [Gonit Sora team](#) congratulates Prof. Sinai on his marvellous achievement!!

List of all the Abel Laureates till date:

? 2003: *Jean-Pierre Serre*, College de France, Paris, France; “For playing a key role in shaping the modern form of many parts of mathematics, including topology, algebraic geometry and number theory”.

? 2004: *Sir Michael Francis Atiyah*, University of Edinburgh and *Isadore M. Singer*, Massachusetts Institute of Technology; “For their discovery and proof of index theorem, bringing together topology, geometry and analysis and their outstanding role in building new bridges between mathematics and theoretical physics”.

? 2005: *Peter D. Lax*, Courant Institute of Mathematical Sciences, New York University; “For his groundbreaking contributions to the theory and application of partial differential equations and to the computation of their solutions”.

? 2006: *Lennart Carleson*, Royal Institute of Technology, Sweden; “For his profound and seminal contributions to harmonic analysis and the theory of smooth dynamical systems”.

? 2007: *Srinivasa S.R. Vardhan*, Courant Institute of Mathematical Sciences, New York University; “For his fundamental contributions to probability theory and in particular for creating a unified theory of large deviations”.

? 2008: *John Griggs Thompson*, University of Florida and *Jacques Tits*, College de France; “For their profound achievements in algebra and in particular for shaping modern group theory”.

? 2009: *Mikhail Leonidovich Gromov*, Institut des Hautes Etudes Scientifiques, Bures-sur-Yvette, Frankrike; “For his revolutionary contributions to geometry”.

? 2010: *John Torrence Tate*, University of Texas at Austin, USA; “For his vast and lasting impact on the theory of numbers”.

? 2011: *John Milnor*, Institute for Mathematical Sciences, Stony Brook University, New York; “For pioneering discoveries in topology, geometry and algebra”.

? 2012: [Endre Szemerédi](#), Alfred Renyi Institute of Mathematics, Hungary; “For his fundamental contributions to discrete mathematics and theoretical computer science, and in recognition of the profound and lasting impact of these contributions on algebraic number theory and ergodic theory”.

? 2013: [Pierre Deligne](#), Institute for Advanced Study, Princeton, New Jersey, USA; “For seminal contributions to algebraic geometry and for their transformative impact on number theory, representation theory, and related fields”.

? 2014: *Yakov G. Sinai*, Department of Mathematics, Princeton University, USA and Landau Institute for Theoretical Physics, Russian Academy of Sciences. He received the Abel Prize “for his fundamental contributions to dynamical systems, ergodic theory, and mathematical physics”.

Sources :

1. <http://www.abelprize.no>
2. <http://www.abelprize.no/nyheter/vis.html?tid=61204>
3. <http://www.abelprize.no/c61094/binfil/download.php?tid=61120>

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