Heinz Hopf Prize 2013

Mathematicians awarded for pioneering research

Zurich, 3.12.2013. **The Heinz Hopf Prize 2013 is being awarded to the two mathematicians Yakov Eliashberg from Stanford University and Helmut Hofer from the Institute for Advanced Study in Princeton. The prize is endowed with CHF 30,000 and is awarded by the Department of Mathematics of ETH Zurich.**

Yakov Matevich Eliashberg and Helmut Hofer are amongst the leading researchers in the area of mathematical topology. Their pioneering contributions have expanded this basic research discipline with new research approaches and methods. "Yakov Eliashberg and Helmut Hofer are two leading mathematicians who have made exceptional achievements in what is currently one of the most active areas of research in mathematics", says Gisbert Wüstholz, Chairman of the Committee of the Heinz Hopf Prize and emeritus ETH professor for mathematics. He pays further tribute to the two laureates by maintaining that "without the work of Eliashberg and Hofer, symplectic topology and contact topology would not even exist in their current form".

As a basic mathematical discipline, topology deals with the abstract structures and general features of spaces of all kind. In doing so, it examines space concepts that are more complex than the space of Euclidean geometry, which people are familiar with in their everyday lives given its three dimensions of height, width and depth.

Lasting influence on further research

By applying the methods of Eliashberg and Hofer, related questions in research such as are possible for Euclidean space can also be asked and answered appropriately for far more general topological spaces. Their findings and methods have also had a lasting influence on other areas of mathematics and physics far beyond their own specialist field, such as low-dimensional topology, field theory, researching dynamic systems and higher analysis.

The research of Eliashberg and Hofer also offers applications in physics in particular. Symplectic topologies contain structures that are suitable for measuring spaces and with which physical processes can be described, similar to the general theory of relativity. The symplectic field theory developed by Eliashberg and Hofer, which is today one of the key tools of topology, can also be applied to questions of physical field theory.

Mathematicians linked to Zurich

Both scientists have a long-standing connection to Zurich as a place of research. Born in 1956, Helmut Hofer studied mathematics at the University of Zurich until 1979 and worked as a professor at ETH Zurich from 1993 to 1997. This dual German/US national has been conducting research at the Institute for

Advanced Study in Princeton since 2009. He has been member of the National Academy of Sciences and the Academia Europaea since 2008 and became a member of the Leopoldina in 2010. He won the Ostrowski Prize in 1999.

Born in 1946, Yakov Matevich Eliashberg regularly visits ETH Zurich as a guest researcher. This Russian mathematician has been working as a professor for mathematics at Stanford University since 1989. He is a fellow of the American Mathematical Society and was awarded the Oswald Veblen Prize in 2001.

In honour of Heinz Hopf

The Department of Mathematics (D-MATH) at ETH Zurich awards the Prize in honour of mathematics professor Heinz Hopf (1894-1971) who died in 1971. At the age of 37, he assumed the ETH Zurich professorship of the famous mathematician, physicist and philosopher Hermann Weyl (1885-1955). Hopf defined the Hopf invariant, which is named after him, as a topological invariant of the mapping of spheres of different dimensions. He also introduced Hopf algebra, which later became fundamentally significant in the theory of quantum groups, amongst other areas.

A visit from brilliant mathematicians

The Prize, which is well-endowed with CHF 30,000, is donated by Dorothee and Alfred Aeppli – the latter being a former student of Heinz Hopf. The committee responsible for awarding the Hopf Prize is proposed by the Conference of Professors at the Department of Mathematics at ETH Zurich and appointed by the ETH President. The Heinz Hopf Prize has been awarded every two years since 2009. In 2009 it went to Robert MacPherson from the Institute for Advanced Study in Princeton and in 2011 to Michael Rapoport from the University of Bonn.

Further Information

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Heinz Hopf Lectures and award ceremony

On 3 December 2013, Professor Roland Siegwart, ETH Vice President Research and Corporate Relations, will award the Heinz Hopf Prize to Yakov Eliashberg and Helmut Hofer in the Semper Aula (HG G 60).

The two Heinz Hopf Lectures on the subject of "From dynamic systems to geometry and back" will be held on Tuesday, 3 December (Helmut Hofer) in HG G 60 and on Wednesday, 4 December (Yakov Eliashberg) in HG F 1 at 5.15 p.m.
The award ceremony and the Lectures are open to the public.

You can find further information at: http://www.math.ethz.ch/hopf

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