

# Kontsevich Awarded Shaw Prize

On May 29, 2012, the Shaw Foundation announced the awarding of the 2012 Shaw Prize in Mathematical Sciences to MAXIM KONTSEVICH “for his pioneering works in algebra, geometry and mathematical physics, and in particular deformation quantization, motivic integration, and mirror symmetry.” The prize carries a cash award of US\$1 million. The Shaw Prize in Mathematical Sciences Committee made the following announcement: “Recently, some of the most profound advances in algebra and geometry have been inspired by ideas from physics. Maxim Kontsevich has led the way in a number of these developments.

“Beginning with Heisenberg’s introduction of quantum mechanics, the mathematical process of quantization—that is, of passing from classical to quantum mechanics—has been a central theme. One version, known as deformation quantization, has for its natural setting classical spaces known as Poisson manifolds. Their exact quantization had been carried out in special cases, but in general this proved to be a formidable problem. It was resolved brilliantly by Kontsevich, who used ideas from quantum field theory.

“Kontsevich’s invention of motivic integration, a striking new conceptual tool, allowed him and others to resolve some problems in algebraic geometry (the study of solutions to polynomial equations to several variables) that had previously seemed way out of reach.

“The discovery by string theorists of ‘mirror symmetry’ led to a series of unexpected mathematical predictions which assert that two apparently different geometries appearing in string theory—symplectic geometry, which is connected with classical mechanics, and algebraic geometry—are ‘mirrors’ to each other. Thanks to the contributions of many mathematicians, these assertions have gradually been proven. The modern understanding of mirror symmetry is framed by fundamental insights and advances. Many of these are due to Kontsevich, who, beginning with his 1994 ‘homological mirror symmetry conjecture’, keeps revisiting the original formulation to provide

clearer conceptual answers to the mathematical question ‘What is mirror symmetry?’”

Maxim Kontsevich was born in 1964 in Khimki, Russia. He is currently a permanent professor at l’Institut des Hautes Études Scientifiques, a position he has held since 1995. He holds the AXA-IHES Chair for Mathematics. He received his Ph.D. in 1992 from the University of Bonn, Germany. From 1990 to 1994 he held visiting positions at the Max Planck Institute, Harvard University, and the Institute for Advanced Study. He was professor at the University of California, Berkeley, from 1993 to 1995. In 1999 he became a French citizen. He is a Fields Medalist (1998) and the recipient of the Henri Poincaré Prize (1997), the Prize of the International Congress of Mathematical Physics (1997), and the Crafoord Prize (2008). He is a member of the Academia Europaea and l’Institut de France.

The Shaw Prize is an international award established to honor individuals who are currently active in their respective fields and who have achieved distinguished and significant advances, who have made outstanding contributions in culture and the arts, or who have achieved excellence in other domains. 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 Science and Medicine, and the Prize in Mathematical Sciences. 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 Demetrios Christodoulou and Richard S. Hamilton (2011), Jean Bourgain (2010), Simon K. Donaldson and Clifford H. Taubes (2009), Vladimir Arnold and Ludwig Faddeev (2008), 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

DOI: <http://dx.doi.org/10.1090/noti899>