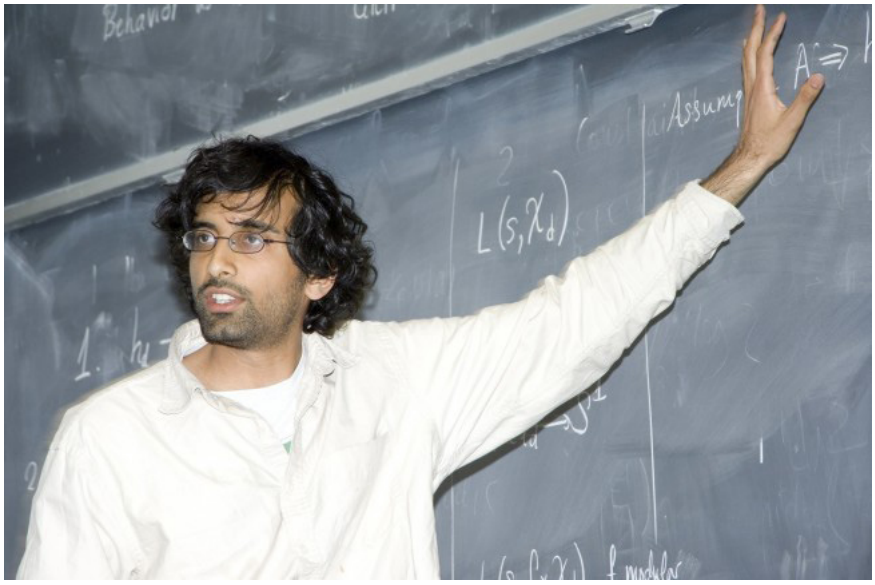
News Review

The Infosys Award Winner in Mathematics – 2016



Akshay Venkatesh

The Indian-Australian mathematical prodigy Akshay Venkatesh has won the Infosys Award in Mathematics for the year 2016. His research work has exceptionally wide ranging foundational and creative contributions to modern Number Theory. His unique ability to use the wide ranging techniques drawn from analytic number theory, ergodic theory, homotopy theory to address concrete problems in Number Theory, and discover new phenomena attest to the essential unity of Mathematics.

Akshay Venkatesh was born on 21st November, 1981 at New Delhi. But at the age of four he migrated to Perth in Australia along with his parents. In Perth he had his school education After completing school, he attended the Scotch College in the same city. Right from his childhood, he had a flair for mathematics. So he joined the extra-curricular training classes for gifted students in the State Mathematical Olympiad programme. At the age of twelve, in 1993, he competed at the 24th International Physics Olympiad in Williamsburg, Virginia in the United States of America. There he won a bronze medal. The next year, he shifted his attention to his favourite subject that is Mathematics. In 1994, he secured the

second place in the Australian Mathematical Olympiad. Subsequently, in the 6th Asian Pacific Mathematics Olympiad Akshay Venkatesh won a silver medal and finally he won a bronze medal in the International Mathematical Olympiad held in Hongkong the same year. By the age of only twelve years he had successfully represented Australia and won medals at both the International Physics Olympiad as well as the International Mathematics Olympiad. He happens to be the only Australian to have achieved this feat.

In 2002, he obtained his Ph.D. from the world famous Princeton University of U.S.A for his thesis entitled '*Limiting forms of the trace formula'*. He got a post-doctoral position at the Massachusetts Institute of Technology (MIT) and served as a C. L. E. Moore Instructor. From 2004-2006 he obtained a Clay Research Fellowship from the Clay Mathematics Institute and was an Associate Professor at the Courant Institute of Mathematical Sciences at New York. From 2005 to 2006, he was a member of the *School of Mathematics* at the Institute of Advanced Study. On the 1st September, 2008 he joined as Professor of Mathematics at Stanford University in USA.

The main research interests of this Indian-Australian mathematician are in the fields of counting, equi-distribution problems in automorphic forms and number theory. In particular representation theory, locally symmetric spaces and ergodic theory are his forte. Singly or in collaboration with other reputed mathematicians, Akshay Venkatesh has contributed handsomely in these areas of mathematics. Using ergodic methods, he in collaboration with Jordan Ellenberg has done significant research on the Hasse principle for integral representations of quadratic forms by quadratic forms. In a series of papers, Manfred Einsidler, Phillipe Michel and Akshay Venkatesh revisited the Linnik ergodic method and solved a longstanding conjecture of Yuri Linnik on the distribution of torus orbits attached to cubic number fields. Professor Akshay Venkatesh has given a very novel and more direct way of establishing sub-convexity estimates for L-functions in numerous cases, extending the foundational work of Hardy-Littlewood-Weyl, Burgess and Duke-Friedlander-Iwanice. Using this approach Professor Venkatesh in collaboration with Phillipe Michel was finally successful in the complete resolution of the sub-convexity problem of GL(1) and GL(2) L-functions over general number fields.

For his superb mathematical achievements, Professor Akshay Venkatesh has received many honours and prizes. In 2007 he was awarded the Salem Prize and the Packard Fellowship. In 2008 he was awarded the SASTRA Ramanujan Prize. This prize was handed over to Professor Venkatesh at the *International Conference on Number Theory and Modular Forms* held at the SASTRA University, Kumbakonam. Incidentally, Kumbakonam happens to be the hometown of the legendary Indian mathematical genius, Srinivasa Ramanujan. In 2010, Professor Akshay Venkatesh was an invited speaker at the International Congress of Mathematics (ICM), which was held for the first time in India at Hyderabad. In 2016 he was awarded the most coveted Infosys Prize for mathematics as a mark of recognition to his superlative contributions in mathematical sciences.

By **Purabi Mukherji**,
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