



Akshay Venkatesh

Professor, Department of Mathematics, Stanford University, USA

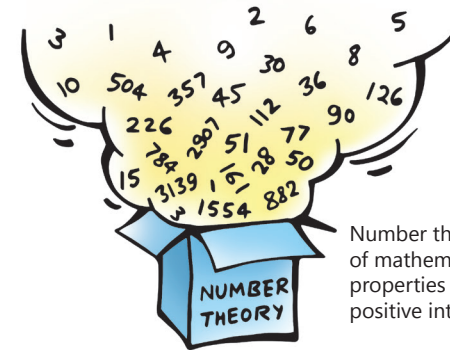
- B.Sc. in Mathematics from The University of Western Australia, Perth, Australia
- Ph.D. in Mathematics from Princeton University, USA

Prof. Akshay Venkatesh is a very broad mathematician who has worked at the highest level in number theory, arithmetic geometry, topology, automorphic forms and ergodic theory. He is almost unique in his ability to fuse algebraic and analytic ideas to solve concrete and hard problems in number theory.

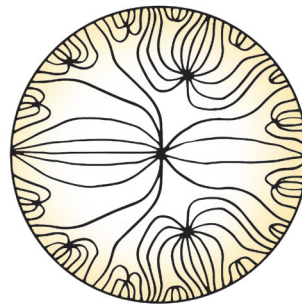
"I think there's a lot of math in the world that's not at university. Pure math is only one part of math but math is used in a lot of other subjects and I think that's just as interesting. So learn as much as you can, about all the subjects around math and then see what strikes you as the most interesting."



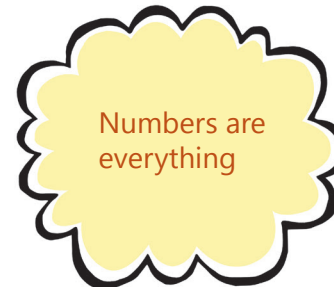
Ancient civilizations developed intricate methods of counting. Sumerians, Mayans and Greeks all show evidence of elaborate mathematical calculations.



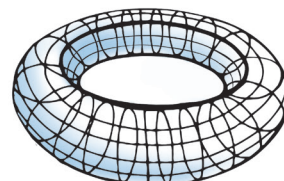
Number theory is the branch of mathematics that deals with properties of whole numbers or positive integers.



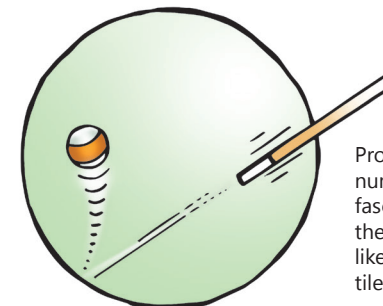
In addition, Venkatesh's work on the cohomology of arithmetic groups studies the shape of these tiles and connects it with other areas of math.



Number theorists are particularly interested in hyperbolic 'tilings'. These 'tiles' carry a great deal of information that are significant in number theory. For example they are very interested in the characteristic frequencies of the tiles. These are the frequencies the tiles would vibrate at, if they were used as drums.



This is ergodic theory—a branch of mathematics that studies dynamical systems with an invariant measure and related problems.



Prof. Venkatesh works in the field of number theory and observes such fascinating phenomena as what would the trajectories of a billiard ball look like, if one of these hyperbolic (curved) tiles were to be used as a billiard table.