Hari Sahasrabuddhe Lecture Series

on

Inflections in Computing

Department of Computer Science and Engineering

IIT Kanpur

Jan 14, 3PM @ RM101

(Rajeev Motwani Building Department of CSE, IITK)

Title: Homotopy Type Theory

Abstract: Homotopy type theory is a homotopical interpretation of a system of constructive type theory. It provides a new framework for the foundations of mathematics with intrinsic geometric content and a computational implementation. It is currently under intense development by logicians, mathematicians and computer scientists as a potential tool for both the large-scale formalization and verification of mathematical proofs and formal verification of software. In this survey talk, I will introduce this system and show how it can be used to give new logical proofs of some classical theorems from algebraic topology, making use of the new ideas of higher inductive types and the univalence axiom.

For information, see http://www.homotopytypetheory.org

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Steve Awodey is a Professor of Philosophy and Mathematics at Carnegie Mellon University.

He studied mathematics and philosophy at the University of Marburg and the University of Chicago. He earned his Ph.D. from Chicago under Saunders Mac Lane in 1997. He is an active researcher in the areas of category theory and logic, and has also written on the philosophy of mathematics. He is one of the originators of the field of homotopy type theory. He was a member of the School of Mathematics at the Institute for Advanced Study in 2012-13.