NANYANG TECHNOLOGICAL UNIVERSITY

SEMINAR ANNOUNCEMENT

Title: Structure within the class of K-trivial sets

Prof. André Nies
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Date: 6 February 2017 (Monday)
Time: 4.00pm – 5.00pm
Venue: MAS Executive Classroom 1 #03-06,
School of Physical and Mathematical Sciences

Abstract

The K-trivial sets are antirandom in the sense that the initial segment complexity in terms of prefix-free Kolmogorov complexity K grows as slowly as possible. Since 2002, many alternative characterisations of this class have been found: properties such as low for K, low for Martin-Löf (ML) randomness, and basis for ML randomness, which state in one way or the other that the set is close to computable.

Initially the class looked quite amorphous. More recently, internal structure has been found. Bienvenu et al. (JEMS 2016) showed that there is a ``smart" K-trivial set, in the sense that any random oracle computing it computes all K-trivials. Greenberg, Miller and Nies(submitted) showed that there is a dense hierarchy of subclasses. Even more recent results with Turetsky combine the two approaches using cost functions. ML-reducibility (A is below B if every random oracle computing B also computes A) appears to a good way to compare the complexity of K-trivials, but the vexing question remains whether this reducibility is arithmetical.

Speaker Biography

Prof. Nies is a leading researcher in computability theory and randomness. He works at the University of Auckland since 2002, and has been a fellow of the Royal Society of New Zealand since 2013. He received his PhD degree in mathematics from the University of Heidelberg in 1992, and completed his Habilitation in Heidelberg in 1998. Prof. Nies was a sectional speaker at the ICM 2010. His book "Computability and Randomness" (OUP, 2009) is popular among computability theorists.

Host: Associate Professor Wu Guohua, School of Physical and Mathematical Sciences

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