

IAS/SSCI Joint Lecture

hosted by
Department of Mathematics

Mixing times for random walks and strong asymptotic freeness

by

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Abstract

A finite ergodic Markov chain exhibits cutoff if its distance to equilibrium remains close to its initial value over a certain number of iterations and then abruptly drops to near 0 on a much shorter time scale. Originally discovered in the context of card shuffling (Aldous-Diaconis, 1986), this remarkable phenomenon is now rigorously established for many Markov chains. There is however a lack of general theory for proving this phenomenon. In this talk, in the context of random walks, we will see that strong asymptotic freeness or more generally strong asymptotic convergence of operator algebras can be used to establish cutoff. We will notably illustrate our results for Markov chains whose transition kernel is a non-commutative polynomial in random uniform and independent permutations matrices. This is based on a joint work with Hubert Lacoin (IMPA).

Date: Monday, 1 April 2019

Time: 3:00p.m. - 4:00p.m.

**Venue: Room 2303, Academic Building
2/F, (Lifts 17-18), HKUST**

All are welcome!