



INSTITUTE SEMINAR

Friday, 15 November 2013

4.00 pm

Fermion

Speaker:

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Title:

Randomness in random networks: A random matrix theory approach

Abstract:

Random matrix theory, initially proposed to understand the complex interactions in nuclear spectra, has demonstrated its success in diverse domains of science ranging from quantum chaos to galaxies. We demonstrate the applicability of random matrix theory in complex networks. These interaction networks are significantly different from random networks and often exhibit ubiquitous properties in terms of their structure and organization. We show that spectral fluctuations of such interaction matrices emulate universal random matrix theory predictions. Study of further spectral properties of the interaction networks help in identification of a set of genes/proteins which regulate the flow of information in the network. Down the lane, these genes/proteins are likely to have played a prominent role in the origin and evolution of the biological systems.
