



Bangalore Probability Seminar

Title : Co-evolving Vertex and Edge Dynamics in Dense Graphs

Speaker : Siva Athreya (ICTS-TIFR, Bengaluru)

Date : Monday, 07 April 2025

Time : 3:15 PM (IST)

Abstract : We consider a random graph in which vertices can have one of two possible colours. Each vertex switches its colour at a rate that is proportional to the number of vertices of the other colour to which it is connected by an edge. Each edge turns on or off according to a rate that depends on whether the vertices at its two endpoints have the same colour or not. We prove that, in the limit as the graph size tends to infinity and the graph becomes dense, the graph process converges, in a suitable path topology, to a limiting Markov process that lives on a certain subset of the space of coloured graphons. In the limit, the density of each vertex colour evolves according to a Fisher-Wright diffusion driven by the density of the edges, while the underlying edge connectivity structure evolves according to astochastic flow whose drift depends on the densities of the two vertex colours. This is joint work with Frank den Hollander and Adrian Roellin.

Venue : Madhava Lecture Hall

Zoom Link: <https://us02web.zoom.us/j/88670406480>

Meeting ID: 886 7040 6480