ICTS Seminar (Bangalore Probability Seminar)

Title : The SIR epidemic on a dynamic Erdős-Rényi random graph

Speaker : Adrian Roellin (National University of Singapore, Singapore)

Date : Monday, 23 September 2024

Time : 2:00 PM (IST)

Abstract : We investigate the SIR epidemic on a dynamic Erdős-Rényi random graph, in which edges appear and disappear independently of each other. We establish a functional law of large numbers for the susceptible, infected, and recovered ratio curves after a random time shift, and demonstrate that, under a variety of possible scaling limits of the model parameters, the epidemic curves are solutions to a system of ordinary differential equations. In most scaling regimes, these equations coincide with the classical SIR epidemic equations. In the regime where the average degree of the network remains constant and the edge-flipping dynamics remain on the same time scale as the infectious contact process, a novel set of differential equations emerges. This system contains additional quantities related to the infectious edges, but somewhat surprisingly, contains no quantities related to higher-order local network configurations. This is joint work with Yuanfei Huang.

Venue : Feynman Lecture Hall
Zoom Link: https://us02web.zoom.us/j/88670406480
Meeting ID: 886 7040 6480