Theoretical Statistics & Mathematics Unit
Indian Statistical Institute
203 B T Road, Kolkata 700108.

SEMINAR

Of

BHASWAR BHATTACHARYA

University of Pennsylvania

Date & Time

04th October, 2024; 04:15 PM

Venue

L-Infinity, Stat-Math Unit
5th Floor, A N Kolmogorov Bhawan
Indian Statistical Institute, Kolkata 700108

Title of the Talk

Higher-Order Graphon Theory; Fluctuations, Inference, and Degeneracies

Abstract

Motifs (patterns of subgraphs), such as edges and triangles, encode important structural information about the geometry of a network. Consequently, counting motifs in a large network is an important statistical and computational problem. In this talk we will consider the problem of estimating motif densities and fluctuations of subgraph counts in an inhomogeneous random graph sampled from a graphon. We will show that the limiting distributions of subgraph counts can be Gaussian or non-Gaussian, depending on a notion of regularity of subgraphs with respect to the graphon. Using these results and a novel multiplier bootstrap for graphons, we will construct joint confidence sets for the motif densities. Finally, we will discuss various structure theorems and open questions about degeneracies of the limiting distribution and connections to quasirandom graphs.

Joint work with Anirban Chatterjee, Soham Dan, and Svante Janson

All are Cordially Invited