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ICTS Statistics and Probability Lab PhD Student Seminar Series

Date : Thursday, 27 November 2025
Time : 11:15 AM (IST)
Talks : **Sourish Maniyar- IISc, Bengaluru**

Title: On the heaviest and largest components in critical inhomogeneous random graphs

Abstract: David Aldous (1997) studied the component weights of the rank-1 inhomogeneous random graph in the critical window, proving that the scaled component weights converge, to the excursion sizes of a reflected Brownian motion with parabolic drift in the ℓ^2 -topology. In this talk, we shall see that the same is true for scaled component sizes as well, and we will discuss the key ideas used to prove this result. As a corollary to this result, we obtain that the ranking by component sizes coincides with the ranking by component weights with high probability.

This talk is based on a joint work with Louigi Addario-Berry, Sasha Bell, Prabhanka Deka, Serte Donderwinkel, Minmin Wang and Anita Winter.

Shaibal Karmakar (ICTS-TIFR)

Title: Multiplex random graphs

Abstract: 'Multiplex networks' model settings where the same set of nodes interacts through different types of connection. I will discuss our results on the emergence of small multi-layer patterns, or submultiplexes, in a two-layer Erdős–Rényi model in which edges across layers may be correlated. For any fixed submultiplex H , we identify the exact threshold for its appearance and show that the corresponding parameter regime forms a polyhedral region in \mathbb{R}^3 . Within this region, the number of copies of H satisfies a central limit theorem with quantitative error bounds, while on the boundary the distribution transitions to Poisson-type limits. These results extend the classical theory of subgraph counts to correlated multiplex networks.

This is a joint work with Bhaswar B. Bhattacharya, Sanchayan Bhowal, Karambir Das and Laura Eslava.



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Pradeeptha Jain (ICTS-TIFR)

Title: The Triangle Friendship Paradox

Abstract: We consider the generalised friendship paradox, focussing on the number of triangles at a vertex as the relevant attribute. We show that, contrary to the setting where the attribute is the number of edges at a vertex or the number of wedges at a vertex, the average friendship-bias of the number of triangles at a vertex is not always non-negative. We identify classes of finite deterministic graphs for which the bias is non-negative, and provide examples of finite deterministic graphs for which it is not. For certain classes of sparse and dense random graphs, we compute the scaling of the bias in the limit as the number of vertices tends to infinity.

This is joint work done with Bishakh Bhattacharya, Frank den Hollander, Nitya Gadhiwala, and Tejashree Subramanya.

Venue : Feynman Lecture Hall (Hybrid)

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

Meeting ID: 886 7040 6480