# Theoretical Statistics and Mathematics Unit, Kolkata
# INDIAN STATISTICAL INSTITUTE

## SEMINAR

**Date: December 29, 2025**
**Time: 04:15 PM**

**VENUE:**

**L- Infinity**
**(5th Floor, A.N. Kolmogorov Bhavan), ISI Kolkata**

**TITLE:**

## Subcritical percolation on evolving networks

**SPEAKER:**

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## ABSTRACT:

*We investigate percolation on growing networks where the evolution of connected components resembles a non-equilibrium version of the multiplicative coalescent. The supercritical regime for a host of such models was conjectured in statistical physics, and then rigorously proven in mathematics, to exhibit behavior similar to the BKT infinite-order phase transition. It has further been conjectured that the entire subcritical regime for such growing networks are "critical" with power-law cluster size distributions having a non-universal exponent. We study percolation on the uniform attachment model, as a concrete template in order to develop general tools based on stochastic approximation, local convergence, branching random walks and tree-graph inequalities to prove the above conjectured phenomena. These dynamics lead to novel phenomena, compared to classical 'static' models, including long-range dependence and fixation of the identity of the*
*maximal component, within finite time, among a finite number of 'early' components. Moreover, in contrast with most static network models, we show that the susceptibility, that is, the expected size of the component of a uniformly chosen vertex, remains bounded as the network grows.*

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