



Theoretical Statistics and Mathematics Unit

Indian Statistical Institute

203 B.T. Road, Kolkata - 700108

SEMINAR

Date: July 22, 2026

Time: 02:30 PM

VENUE:

L-2, 4th Floor, A.N. Kolmogorov Bhavan, ISI Kolkata

SPEAKER:

Tamojit Sadhukhan

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TITLE:

**On Some Recent Developments on the
Elephant Random Walks with Two Memory Channels**

ABSTRACT:

Elephant random walk, introduced to study the effect of memory on random walks, determines each future step using information from one randomly chosen past step. However, memory in many real-world processes can be multifaceted and may arise from the interaction of multiple underlying phenomena. Motivated by this, random walks with two memory channels were introduced by Saha (2022), where the future step is determined using information from two independently selected past steps. The asymptotic behavior of the walk depends on the memory parameter p , $0 < p < 1$, which governs the strength of the memory channels. As shown by Maulik, Roy, and Sadhukhan (2025), the model exhibits two phase transitions as p varies: from the diffusive to the superdiffusive regime, and subsequently from the superdiffusive to the ballistic regime. However, the critical case $p = 7/8$, marking the transition between the superdiffusive and ballistic regimes, has remained unresolved. In this talk, we present the asymptotic behavior of the walk at this critical value. We also discuss the mathematical challenges that make the analysis at $p = 7/8$ substantially different from the other parameter regimes. (Based on joint work with Krishanu Maulik and Parthanil Roy.)

ALL ARE CORDIALLY INVITED

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