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TATA INSTITUTE OF FUNDAMENTAL RESEARCH

Bangalore Probability Seminar

Title : Limit Shape and Asymptotic Speeds in Periodic ASEP

Speaker : Nimisha Pahuja (ICTS-TIFR)

Date : Monday, 24 August 2026

Time : 03:00 PM (IST)

Abstract : The asymmetric simple exclusion process (ASEP) is a classical model of interacting particles on the integer lattice. I will discuss a periodic variant of ASEP, in which particles a distance n apart move together, so that the resulting dynamics can be encoded by a random walk on the affine symmetric group. Starting from step initial data, we study the long-time behaviour of the leading particles of this process. We show that these particles separate at a deterministic rate and eventually behave like a multispecies ASEP on a ring of size n , which lets us compute their asymptotic velocities and an associated density profile for the system. The proof combines probabilistic and combinatorial ideas. As a further consequence of the same approach, we obtain a description of the trajectory of a second-class particle, connecting to classical results on second-class particles in the rarefaction fan. This talk is based on joint work with Alexey Bufetov.

Venue : Madhava Lecture Hall

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

Meeting ID: 886 7040 6480