INDIAN STATISTICAL INSTITUTE

203 B.T. Road, Kolkata-700108

Theoretical Statistics and Mathematics Unit

Monday Colloquium

Date: July 01, 2024 Time: 04:15 P.M.

Venue: L-infinity, Stat-Math Unit (5th Floor, A.N. Kolmogorov Bhavan), ISI Kolkata

Jhih-Huang Li

National Taiwan University (NTU)

TITLE:

PushASEP model on a periodic ring

ABSTRACT:

It is a joint work with Axel Saenz (Oregon). We are interested in an interacting particle system called PushASEP model, which is a natural generalization of the TASEP model. Instead of studying the model on an infinite line, we look at a periodic ring, which brings us back to a finite-state Markov process.

More precisely, we are in the following setup. At time 0, N particles are distributed on a periodic ring of size L, and they move to the left and right according to specific rules. We want to understand the asymptotic behavior of such a system for large L and N with the ratio N/L fixed.

We will explain how to study the model using different approaches derived from contour integrals. We will also explain how to diagonalize the system. These methods allows us to establish results in the relaxation time scale t ~ L^{3/2}, which can be described by distributions interpolating the Gaussian distribution and the Tracy-Widom distribution.

ALL ARE CORDIALLY INVITED