

*Department of Mathematics,
University of California San Diego*

Math 288 - Probability and Statistics Seminar

Dan Daniel Erdmann-Pham

UC Berkeley

Hydrodynamics of the inhomogeneous l-TASEP and its Application to Protein Synthesis

Abstract:

The inhomogeneous l-TASEP is an interacting particle process wherein particles stochastically enter, unidirectionally traverse, and finally exit a one-dimensional lattice segment at rates that may depend on a particle's location within the lattice. Its homogeneous version is known to exhibit various phase transitions in macroscopic observables like particle density and current, with fluctuations governed by what is known as the KPZ equation. In this talk, we begin to extend such results to the inhomogeneous setting by developing the so-called hydrodynamic limit, which governs the system dynamics on an LLN-type scale. If time permits, we apply our results to elucidate the key determinants of protein synthesis, which motivated the introduction of TASEP fifty years ago.

This is based on joint work with Khanh Dao Duc and Yun S. Song.

Host: Benson Au

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11:00 AM

For zoom ID and password email:

bau@ucsd.edu
