מכון ויצמן למדע

THE WEIZMANN INSTITUTE OF SCIENCE

FACULTY OF MATHEMATICS AND COMPUTER SCIENCE

Geometric Functional Analysis and Probability Seminar

Room 290C ,Ziskind Building
on Thursday, Jun 29, 2017
at 11:15

Amir Dembo
Stanford

The criticality of a randomly-driven front.

Abstract:

Consider independent continuous-time random walks on the integers to the right of a front R(t). Starting at R(0)=0, whenever a particle attempts to jump into the front, the latter instantaneously advances k steps to the right, absorbing all particles along its path. Sly (2016) resolves the question of Kesten and Sidoravicius (2008), by showing that for k=1 the front R(t) advances linearly once the particle density exceeds 1, but little is known about the large t asymptotic of R(t) at critical density 1. In a joint work with L-C Tsai, for the variant model with k taken as the minimal random integer such that exactly k particles are absorbed by the move of R(t), we obtain both scaling exponent and the random scaling limit for the front at the critical density 1. Our result unveils a rarely seen phenomenon where the macroscopic scaling exponent is sensitive to the initial local fluctuations (with the scaling limit oscillating between instantaneous super and sub-critical phases).

Email: efrat.levitsky@weizmann.ac.il * Phone: (08)9343349 * Fax: (08)9344308