The Weizmann Institute of Science
Faculty of Mathematics and Computer Science

Geometric Functional Analysis and Probability Seminar

Room 155, Ziskind Building
on Thursday, Jan 16, 2025
at 13:30

Rami Atar
Technion

will speak on

Free boundary problems and particle systems

Abstract:
Particle systems that can be described macroscopically via free boundary problems (FBP) include the N-branching Brownian motion (branching Brownian particles on the line with removal of the leftmost particle upon each branching), and the Atlas model (Brownian particles on the line where the leftmost particle is equipped with a positive drift). The regularity of the free boundary plays a crucial role in proving the particle system -- FBP relation, but does not hold in some natural generalizations of these models. I will describe a weak FBP formulation where control over free boundary regularity is not required in order to achieve this relation in the two cases above. I will also describe an analogous weak formulation of a ``free obstacle'' problem aimed at a branching Brownian motion with removals occurring at the most densely populated areas.

This is partly based on joint works with Amarjit Budhiraja and with Leonid Mytnik and Gershon Wolansky.