ICTS Colloquium

Title : Geometry of Random Spatial Growth and the Solution of the Slow Bond Problem

Speaker : Riddhipratim Basu, Stanford University, USA

Date : Wednesday, December 21, 2016

Time : 3:00 PM

Venue : Emmy Noether Seminar Room, ICTS Campus, Bangalore

Abstract : Many random growth models exhibit universal behaviours believed to be explained by the so called KPZ universality class. However, mathematically rigorous understanding of these models have mostly been restricted to the class of "exactly solvable" models, such as Totally Asymmetric Simple Exclusion Process (TASEP) where exact formulae are available using powerful tools of integrable probability. This approach is not robust, and fails even for small microscopic perturbations of the exactly solvable models. I shall describe a new geometric approach, which, together with some basic integrable ingredients, can be used to understand certain exactly solvable systems in presence of local defects. In particular this settles the longstanding Slow Bond problem of Lebowitz by showing that for TASEP with a slow bond at the origin, the maximal current changes for any arbitrarily small slowdown factor. I shall also briefly discuss some other recent results along the same lines.