

Timo Seppäläinen (U Wisconsin-Madison)

Busemann measures and the geometry of the corner growth model

The corner growth model is a last-passage percolation model of random growth on the square lattice. It lies at the nexus of several branches of mathematics: probability, statistical physics, queueing theory, combinatorics, and integrable systems. It has been studied intensely for 40 years. We introduce an analytical tool, the Busemann measure, that relates naturally to certain geometric properties of the geodesics of the corner growth model. The Busemann measure is the Lebesgue-Stieljes measure of the Busemann function on the space of spatial directions. In the exactly solvable exponential case properties of the Busemann measures are explicitly available and can be used to elucidate a global picture of uniqueness and coalescence of semi-infinite geodesics. Based on collaborations with Louis Fan (Indiana), Firas Rassoul-Agha and Chris Janjigian (Utah).