BOSTON UNIVERSITY GEOMETRY SEMINAR

Growth of random surfaces

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Wednesday March 2, 4-5 pm in MCS 149
Tea 3:45-4 in MCS 153

Abstract:
We describe a class of exactly solvable random growth models of one and two-dimensional interfaces. The growth is local (distant parts of the interface grow independently), it has a smoothing mechanism (fractal boundaries do not appear), and the speed of growth depends on the local slope of the interface. The models enjoy a rich algebraic structure that is reflected through closed determinantal formulas for the correlation functions. Large time asymptotic analysis of such formulas reveals asymptotic features of the emerging interface in different scales. Macroscopically, a deterministic limit shape phenomenon can be observed. Fluctuations around the limit shape range from universal laws of Random Matrix Theory to conformally invariant Gaussian processes in the plane. On the microscopic (lattice) scale, certain universal determinantal random point processes arise.