

Macdonald processes, quantum integrable systems and the KPZ universality class (Part 1)

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A large class of one dimensional systems are predicted to share the same universal long-time/large-scale behaviors. By studying certain integrable models within this Kardar-Parisi-Zhang (KPZ) universality class we access what should be universal statistics and phenomena. The purpose of this talk is to explain how representation theory and integrable systems can be harnessed in the form of the theory of Macdonald processes and quantum integrable systems to discover and analyze a variety of probabilistic models (such as directed polymers, interacting particle systems, growth processes, random matrices, and tilings).