**School on Non-linear Dynamics, Dynamical Transitions and
Instabilities in Classical and Quantum Systems
14 July - 1 August 2014, Trieste, Italy**

**Quantum Integrability and the
Kardar-Parisi-Zhang Universality Class**

Ivan CORWIN
Department of Mathematics
Massachusetts Institute of Technology MIT
02139 Cambridge, MA, USA

Abstract:

We describe how certain quantum integrable systems (delta Bose gas, q-Boson system, XXZ spin chain) arise in the analysis of models in the Kardar-Parisi-Zhang universality class. We then develop Plancherel theorems (coordinate Bethe ansatz completeness) for these systems and uses these to eventually derive Fredholm determinants and perform asymptotic analysis. We may also touch on connections to algebraic Bethe ansatz (i.e. quantum inverse scattering method) and Macdonald processes.