



The Galileo Galilei Institute for Theoretical Physics
Arcetri, Florence



Statistical mechanics, integrability and combinatorics

May 11, 2015 - July 3, 2015

Topics:

- Random tilings and limit-shape phenomena
- Random matrices, determinantal processes and KPZ universality class
- Discrete holomorphicity and integrability
- Lattice models and combinatorics
- Quantum integrability, correlation functions and entanglement

The last decade has seen an increasing interaction between theoretical physics, combinatorics and probability theory, concerning the study and applications of exactly solvable models of statistical mechanics, with a number of spectacular developments.

As examples of such constructive interplay, let us mention: dimer models, random surfaces and limit shape phenomena; random tilings, random partitions and stochastic growth processes; random tilings and representation theory; Schramm-Loewner evolution and Conformal Field Theory; the recently developed idea of discrete holomorphicity; a rigorous characterization of Kardar-Parisi-Zhang universality class; classical problems in combinatorics, such as the enumeration of Alternating Sign Matrices and plane partitions; the Razumov-Stroganov correspondence; lattice supersymmetry, and in particular, supersymmetric quantum spin chains.

The purpose of this meeting is to bring together theoretical and mathematical physicists with expertise in probability theory, analysis, integrable systems, combinatorics and representation theory, to boost further advances in the field.

Organizing Committee:

Filippo Colomo (INFN, Florence)
Paul Fendley (University of Virginia)
Andrei Pronko (Steklov, Saint-Petersburg)
Nicolai Reshetikhin (University of California, Berkeley)
Paul Wiegmann (University of Chicago)
Paul Zinn-Justin (CNRS, UPMC-Paris 6)