

SIMIS Seminar series on Random matrix theory, Integrable systems and Applications.

Prof. Ivan Kostov

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“Probing the local curvature in 2D Quantum Gravity”

Abstract

The six-vertex model on random lattices shows unusual behaviour of the boundary observables. The one-point functions on the disk are given by K-Bessel functions only at the Berezinsky-Kosterlitz-Thouless point. In general, the boundary behaviour of the six-vertex model is not described by the boundary Liouville gravity problem, the so called FZZT branes. In general, the length dependence is given by a generalised Bessel function which is related to the Wright function. The reason for that is that the loop-gas description of the model feels the local distribution of the curvature. The weight of a loop contains a phase factor proportional to the integrated gaussian curvature inside the loop. Presumably the world-sheet description should be set up with a boundary condition which mixes the Liouville and the matter fields. This mixing is obviously a consequence of the coupling to the local curvature. The results for the boundary observables can be used to obtain the distribution of the curvature at different scales of the random surface.

Biography of the speaker

Ivan Kostov obtained his PhD in 1982 from the Moscow State University, with scientific advisers Vladimir Feinberg and Alexander Migdal. Then he worked in the group of Ivan Todorov at the INRNE Sofia, and since 1990 as a CNRS researcher at the IPhT, CEA-Saclay, France. Ivan Kostov has worked on large N gauge theories, critical phenomena on random surfaces, large N matrix models, integrability and AdS/CFT.

Date and Place: 13th June 2025, 14:00h-15:00h. Room: 1510. Send comments or questions to: Miguel Tierz to tierz at simis.cn (Seminar organizer) or Jean-Emile Bourgine (host) at bourgine at simis.cn.