

Stochastic quantization of Liouville conformal field theory

In this talk, I will present some results regarding a nonlinear stochastic heat equation on closed surfaces, with exponential nonlinearity, and forced by a space-time white noise. This model arises as the stochastic quantization equation for a two-dimensional conformal field theory. I will first review the construction of the corresponding Gibbs measure, known as the Liouville quantum gravity measure. I will then discuss the almost sure global well-posedness of the dynamics, and finally the invariance of the measure under the resulting dynamics. These results hold on any closed surface, and as special cases they improve previous results by Garban (2020) in the case of the sphere and the torus, while they are new in the case of hyperbolic closed surfaces. This is joint work with Tadahiro Oh (Edinburgh), Tristan Robert (Nancy), and Nikolay Tzvetkov (Cergy-Pontoise).