Contribution ID: **29** Type: **not specified**

Colloquium: Liouville conformal field theory: from the probabilistic construction to the bootstrap construction

Tuesday 13 September 2022 11:30 (1 hour)

Liouville field theory was introduced by Polyakov in the eighties in the context of string theory. Liouville theory appeared there under the form of a 2D Feynman path inte-gral and since then has appeared in a wide variety of contexts (random conformal geometry, SUSY Yang-Mills, etc. . .). Recently, a rigorous probabilistic construction of the path inte-gral was provided using the Gaussian Free Field. In this talk, I will review the probabilistic construction and its equivalence with the bootstrap construction used in the physics literature. The key steps in this equivalence is a probabilistic derivation of the DOZZ formula for the structure constants, the spectral analysis of the Hamiltonian of the theory and the proof that the probabilistic construction satisfies certain natural geometrical gluing rules called Segal's axioms. Based on numerous works with G. Baverez, F. David, C. Guillarmou, A. Kupiainen, R. Rhodes.

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