Quantum integrable systems, conformal field theories and stochastic processes



ID de Contribution: 2

Type: Non spécifié

Conformal bootstrap approach to Liouville theory

We introduce the conformal bootstrap approach to conformal field theory in two dimensions. We emphasize the assumptions that are made in this approach, in particular local conformal invariance, and the existence and associativity of the operator product expansion. From these assumptions we deduce that certain correlation functions obey BPZ differential equations. We then define Liouville theory by a number of assumptions on its spectrum, plus the existence of degenerate fields. We deduce the three-point correlation functions: for most values of the central charge, they are given by the DOZZ formula. We finally explain why it is essential to study four-point functions, and how they can be computed numerically.

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