
Towards three-dimensional conformal probability

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Abstract

Conformal invariance, in the space of time parameters, often occurs in scaling limits of statistical mechanical systems. The simplest example is time-inversion invariance of Brownian motion proved by Paul Lévy in 1940. For two-dimensional systems such as the short-range Ising model, conformal invariance is a new mathematical result in the active area known as conformal probability. I will present an introduction to the Brydges-Mitter-Scoppola model in three dimensions which is related to long-range Ising models and where conformal invariance is the object of very recent conjectures by physicists from the area known as conformal bootstrap. I will also discuss a p-adic or hierarchical toy model where one can prove conformal invariance using rigorous renormalization group methods.

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