

Directed polymer on hierarchical lattices

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In statistical mechanics, various results for several models have been obtained by using ideas of coarse graining and group renormalization. However, very often, for lattice models on \mathbb{Z}^d , group renormalization cannot be performed exactly. For this reason, theoretical physicists introduced new types of lattices, whose structures makes group renormalization easy to compute. We call them hierchical lattices In this talk we present the directed polymer on hierarchical lattices model, introduced by Derida and Cook in 1989, for which we study the localization phenomenon.

We will underline that unlike polymer on trees, directed polymer on hierarchical lattices keeps a lot of the essence of the directed polymer on $\mathbb{N} \times \mathbb{Z}^d$ and for this reason the hierarchical model can be (and has been) used has a tool to solve questions for polymer on $\mathbb{N} \times \mathbb{Z}^d$.