Field Theory of the Random Flux Model

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Abstract

The long-range properties of the random flux model (lattice fermions hopping under the influence of maximally random *link* disorder) are shown to be described by a supersymmetric field theory of non-linear σ model type, where the group $\mathrm{GL}(n|n)$ is the global invariant manifold. An extension to non-abelian generalizations of this model identifies connections to lattice QCD, Dirac fermions in a random gauge potential, and stochastic non-Hermitian operators.