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Improved perturbation expansion for disordered systems: Beating Griffiths singularities.
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We introduce a new expansion to prove exponential clustering of connected correlations in a large class of disordered systems. Our expansion converges for values of the temperature and magnetic field where standard cluster expansions diverge, due to the presence of Griffiths type singularities. It is organized inductively over an infinite sequence of increasing distance scales. In each induction step one redefines what is meant by the "unperturbed system", a procedure somewhat reminiscent of K.A.M. theory. Our techniques may be useful in dealing with the so-called large-field problem in real-space renormalization group schemes.

MSC:

- 60K35** Interacting random processes; statistical mechanics type models; percolation theory
82B05 Classical equilibrium statistical mechanics (general)

Cited in **1** Review
Cited in **23** Documents

Keywords:

exponential clustering; disordered systems; Griffiths type singularities; large-field problem in real-space renormalization group schemes

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