Large deviations in quantum lattice systems

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Abstract

We discuss large deviation properties for Gibbs-KMS states of quantum spin systems or fermions on a lattice: Given a Gibbs state for some interaction we study the asymptotic behavior of the spatial average for general local observables and prove general large deviation upper bounds. For the special case of the energy (or the density) we also provide large daviation lower bounds. Our results apply in a one phase region: in dimension one or at high temperature.