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The Effect of the Berry Phase on the Quantum Critical Properties of the Bose-Fermi Kondo model STEFAN KIRCHNER, Rice University, QIMIAO SI, Rice University — The theory of the quantum critical point of a $T = 0$ transition is traditionally formulated in terms of a quantum-to-classical mapping, leading to a theory of its classical counterpart in elevated dimensions. Recently, it has been shown that this mapping breaks down in an SU(N)×SU(N/2) Bose-Fermi Kondo model (BFKM) [1], a BFKM with Ising anisotropy [2] and the spin-boson model [3]. Here we report the Quantum Monte Carlo results for the scaling properties of the quantum critical point of the BFKM with Ising anisotropy. In addition, using the Lagrangian formulation of the BFKM, we study the critical properties in the presence and absence of the spin Berry phase term. The results of the two cases are compared with the numerical results.
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