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On Asymptotic Expansions for Spin Boson Models

We consider expansions of eigenvalues and eigenvectors for a class of models known as generalized spin boson models. We prove existence of asymptotic expansions for the ground state and the ground state energy to arbitrary order. We need a mild but very natural infrared assumption, which is weaker than the assumption usually needed for other methods such as operator-theoretic renormalization to be applicable. The result complements known analyticity properties.