

Abstract Submitted
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Single-polaron properties for double-well electron-phonon coupling¹ CLEMENS ADOLPHS, MONA BERCIU, Univ of British Columbia — We introduce a new model to describe electron-phonon coupling in systems such as one-dimensional intercalated chains or two-dimensional CuO₂ planes, where symmetry dictates that the linear coupling term vanishes. We show that, under certain conditions, an additional charge carrier dynamically changes the local lattice potential from a harmonic well into a double well. We use the Momentum Average approximation to study the properties of this model in the single-polaron limit. A detailed analysis reveals that despite some qualitative similarities to the linear Holstein model, a renormalized Holstein model cannot account for all of the physics of the double-well model.

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