

Abstract Submitted  
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**Large polaron in an anharmonic crystal lattice** ADIL-GERAI KUSSOW, UMass, Lowell, Dept. of Physics — Extending the large Frohlich polaron problem to an anharmonic lattice the author studies a polaronic state with a large radius of the wave function. The appropriate anharmonic part of the e-ph interaction Hamiltonian is derived, based on methods of quantum field theory. Then, with the help of perturbation theory, the anharmonic contribution to the ground-state energy of a polaron is calculated. The estimate shows that the anharmonicity can considerably increase the large polaron binding energy in a situation of a moderately strong e-ph coupling. A comparison of a developed theory with other anharmonic models of a polaronic state is drawn.

Adil-Gerai Kussow  
Umass, Lowell, Dept. of Physics

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