

## **Kinetic equation for the dynamic system interacting with the phonon field in the case of space inhomogeneity**

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A construction of kinetic equation for the dynamic system interacting with the phonon field in the case of space inhomogeneity is considered basing on the methods developed in [1–3].

As shown here, approaches [1,2] could be generalized for the case of space inhomogeneity. An arbitrary operator construction depending on momentum, space variable and other parameter is used for derivation of kinetic relationship. We consider the method for study of the electron-phonon system and exclusion of phonon operators from the appropriate operator constructions. In particular, the interaction of an electron with the phonon field is described by kinetic equation for the polaron in the case of space inhomogeneity. In the limit of the appropriate approximation this equation gives the exact Boltzmann equation for polaron.

As shown also, if the parameter tends to zero, our generalized dynamic system reduces to the well-known case of the homogenous model.

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3. Yuchi Shimoda, Tatsuya Nakajima, Anju Sawada Hartee-Fock-Bogolubov studies of Bilayer Quantum Hall systems. Modern physics letters B, 19, 11 (2005) 539–548 (World Scientific Publ. Comp.)