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**Rupert Frank** and **Gang Zhou\*** (gzhou@math.binghamton.edu). *the effective equations for polaron, derivation and dynamics.*

Polaron theory is a model of an electron in a crystal lattice. It is studied in the framework of nonequilibrium statistic mechanics. There are two different mathematical models: H. Frohlich proposed a quantum model in 1937; L. Landau and S. I. Pekar proposed a system of nonlinear PDEs in 1948. In this talk I will present a proof that these two models are equivalent to certain orders, and some results about the dynamics. These are joint works with Rupert Frank. (Received February 15, 2018)