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Bose-Fermi-Hubbard-Model in the limit of large fermionic hopping an effective theory ALEXANDER MERING, MICHAEL FLEISCHHAUER, Technical University of Kaiserslautern — We present calculations for the Bose-Fermi-Hubbard model in the limit of large fermionic hopping. Using the Born-Oppenheimer and the Markov-approximation leads to an effective hamiltonian for the bosons. This hamiltonian describes an infinite range extended Bose-Hubbard model with a long range density-density coupling which oscillates with a period that depends on the fermionic density. The resulting phase diagram consists of several different phases which will be analytically discussed and compared to numerical results obtained by exact diagonalization and DMRG methods.

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