. **Charge transport within dynamical mean-field approach**

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The main goal of this paper is to employ the dynamical mean-field theory in the limit of the infinite spatial dimensions and discuss transport properties of strongly correlated systems. The dynamical mean-field method (DMF) maps the Hubbard model onto a single impurity Anderson model, which has to be solved self-consistently.To solve the Anderson model, we employ the iterative perturbation theory (IPT) developed in [1]. Within the IPT, the self-energy is expressed to the second order contribution with respect to the on site Coulomb repulsion. In the DMF approach, in the limit of infinite spatial dimensions, the self-energy and all vertex functions are local and thus the transport quantities can be calculated from the single-particle spectral function. Different density of states are used to study a crossover from coherent Fermi liquid excitations to incoherent excitations. This crossover is seen as a nonmonotonic temperature dependence of various transport quantities such as the resistance, thermopower, and Hall coefficient. The calculations are performed for arbitrary doping over a wide range of temperatures.

9.7 cm

1. H. Kajueter and G. Kotliar, Phys. Rev. Lett. **84**,131 (1996).
2. J.K. Freericks, Pys. Rev. B**70**, 195342 (2004).

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