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Dynamic Hubbard model: Results from dynamical mean field theory GIANG BACH[1], University of Alberta, JORGE HIRSCH[2], Universit of California, San Diego, FRANK MARSIGLIO[3], University of Alberta — The dynamic Hubbard model, in which a pseudo-spin field is used to model orbital relaxation effects due to double occupancy, is investigated using the two-site dynamical mean field approximation at zero temperature. Near half-filling the Mott physics associated with the static Hubbard model is enhanced by the coupling to this auxiliary field. More importantly, the dynamic Hubbard model is strongly electron-hole asymmetric, as can be readily seen for a number of properties. We compute the quasiparticle spectral weight and the frequency dependent spectral function to illustrate some generic features of this model. In particular, holes tend to be heavier than electrons. In the anti-adiabatic limit $\omega_0 \to \infty$, where ω_0 is the pseudo-spin characteristic energy, the linear dependence of the quasiparticle weight on filling shows good agreement with a previously known analytical result in the correlated hopping model.

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