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A DMFT investigation of relaxation phenomena in Mott-insulating states

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Nonequilibrium dynamical mean-field theory (DMFT) provides a nonperturbative way to compute the time evolution of correlated electrons on a lattice, by mapping the lattice model to an impurity model. Recently, we have implemented an impurity solver based on the non-crossing approximation and its extensions, which allows us to address the regime of strong interaction in Hubbard-like models. In this talk I will discuss applications of this method to study the pump-excitation and subsequent relaxation of Mott-insulating states. The thermalization of photo-excited carriers in the Hubbard model is shown to resemble the decay of doublons observed in experiments with ultra-cold atoms.

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