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Non-equilibrium properties of a Mott insulator in an external electric field VOLODYMYR TURKOWSKI, JAMES FREERICKS, Department of Physics, Georgetown University, Washington, D.C. 20057, VELJKO ZLATIC, Institute of Physics, Bijenicka c. 46, P. O. B. 304, HR-10001, Zagreb, Croatia — A dynamical mean-field theory formalism is developed to exactly solve the non-equilibrium properties of the conduction electrons in the Falicov-Kimball model. We study the response of the conduction electrons on a hypercubic lattice in the half-filled case when an external spatially uniform time-dependent electric field is applied. The single-particle response functions and the electric conductivity are calculated as functions of time for different cases of the time-dependent electric field and for different values of the on-site repulsion parameter U . In particular, the most interesting case occurs when U is close to the Mott-insulator transition value.

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