Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Nonequilibrium dynamical mean-field theory near the Mott transition VOLODYMYR TURKOWSKI, JAMES FREERICKS, Physics Department, Georgetown University, Washington, D.C. 20057, VELJKO ZLATIC, Institute of Physics, Bijenicka c.46, P.O.B. 304, HR-10001, Zagreb, Croatia — We exactly calculate the non-equilibrium properties of the Falicov-Kimball model in an external electric field by using a recently developed non-equilibrium dynamical mean-field theory formalism [1,2]. In particular, we analyze the time-dependence of the electrical current in cases with different values of the on-site Coulomb interaction, when the system is in the metallic and in the insulating phases. The most interesting properties take place when the interaction energy is close to the metal-insulator transition value. The dynamics of the Bloch oscillations of the electrical current and the long time steady state nonlinear response are analyzed in detail. [1] J.K.Freericks, V.M.Turkowski, V. Zlatic, To be published in "Proceedings of the 2005 Users Group Conference, IEEE Computer Society."; cond-mat/0511061; [2] V.M. Turkowski, J.K. Freericks, Submitted to Phys. Rev. B; cond-mat/0511063.

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Date submitted: 11 Jan 2006 Electronic form version 1.4