

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Pulsed-field pump-probe response in correlated systems¹ B. MORITZ, T.P. DEVEREAUX, SLAC National Accelerator Laboratory and Stanford University, J.K. FREERICKS, Georgetown University — We describe pump-probe dynamics of the spinless Falicov-Kimball model subject to strong pulsed driving fields. The photoemission response shows a rapid evolution toward a new steady-state following decay of the pump pulse. We characterize the behavior by analyzing the power delivered to the system by the driving field and the corresponding change in the total energy. This prescription allows us to fit the result to an equilibrium response at a higher temperature determined self-consistently. For strong driving fields and correlations on the metallic side of the metal-insulator transition, the response can be described well by that of a system at a higher temperature; however, for correlations on the insulating side of the transition, the response in the nonequilibrium steady-state deviates significantly from that anticipated in quasi-thermal equilibrium.

¹This work was supported by the U.S. DOE under Contract Nos. DE-AC02-76SF00515, DE-FG02-08ER46542, and DE-FG02-08ER46540.

Brian Moritz
SLAC National Accelerator Laboratory and Stanford University

Date submitted: 29 Dec 2010

Electronic form version 1.4