Abstract Submitted
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Pump-probe photoemission spectroscopy of nonequilibrium correlated electrons BRIAN J. MORITZ, THOMAS P. DEVEREAUX, Stanford Institute for Materials and Energy Science (SIMES), SLAC National Accelerator Laboratory and Stanford University, JAMES K. FREERICKS, Department of Physics, Georgetown University — Extension of photoemission spectroscopy to the time domain, using pump-probe techniques, opens the possibility of observing electron dynamics on time-scales relevant for correlated processes. Using a generalization of dynamical mean field theory (DMFT) to nonequilibrium problems, we study temporal evolution of the single-particle response of the Falicov-Kimball model subject to strong driving fields approximating the effect of a finite temporal pump-pulse on the electronic system. This approach captures the redistribution of spectral intensity amongst the accessible nonequilibrium electronic states that accompanies fields with these high excitation densities. We discuss the behavior of the response prior to, coincident with, and following the pump-pulse and comment on the applicability of the "hot" electron model or "melting" of the Mott gap within each regime, focusing particular attention on the evolution of the response following the pump-pulse.

Brian J. Moritz
Stanford Institute for Materials and Energy Science (SIMES),
SLAC National Accelerator Laboratory and Stanford University

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