

Abstract Submitted  
for the MAR15 Meeting of  
The American Physical Society

**Non-adiabatic exchange-  
correlation kernel for the non-equilibrium response of three-dimensional  
Hubbard model**<sup>1</sup> SHREE RAM ACHARYA, NISHA BARAL, VOLODYMYR  
TURKOWSKI, TALAT S. RAHMAN, Univ of Central Florida, Orlando, FL, 32816  
— We apply Dynamical Mean-Field Theory (DMFT) to calculate the non-adiabatic  
(frequency-dependent) exchange-correlation kernel for the three-dimensional Hub-  
bard model. We analyze the dependence of the kernel on the electron doping,  
local Coulomb repulsion and frequency by using three different impurity solvers:  
Hubbard-I, Iterative Perturbation Theory (IPT) and Continuous-Time Quantum  
Monte Carlo (CT-QMC). From the calculated data, we obtain approximate analyt-  
ical expressions for the kernel. We apply the exact numerical and analytical kernels  
to study the non-equilibrium response of the system for applied ultrafast laser pulse.  
We demonstrate that the non-adiabaticity of the kernel plays an important role in  
the system response; in particular, leading to new excited-states involved in the  
system dynamics.

<sup>1</sup>Work supported in part by DOE Grant No. DOE-DE-FG02-07ER46354

Shree Ram Acharya  
Univ of Central Florida, Orlando, FL, 32816

Date submitted: 14 Nov 2014

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