

Abstract Submitted  
for the MAR07 Meeting of  
The American Physical Society

**Coulomb Interaction-induced Checkerboard Patterns in Disordered Cuprates** DEGANG ZHANG, Texas Center for Superconductivity and Department of Physics, University of Houston, TX 77204 — We study the effect of the Coulomb interaction on the local density of states (LDOS) and its Fourier component in disordered cuprates. It is shown that the Coulomb interaction suppresses strongly the maximum value of the LDOS induced by the dopant impurity at each energy and expands significantly the Friedel oscillation in real space. The existence of the Coulomb interaction with a moderate strength yields an energy-dependent checkerboard LDOS modulation around the impurity, which is very different from that produced by pure quasiparticle interference. The orientation and transformation of the checkerboard pattern with energy and the relations among the modulation vectors, dopings and the bias voltages agree qualitatively with the recent STM experiments.

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Date submitted: 16 Nov 2006

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