Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Downward Shift of Infrared Spectral Weight in the Pseudogap State of Cuprates: Role of Anisotropy ROUZBEH GERAMI, CHETAN NAYAK, University of California, Los Angeles — Transfer of the infrared spectral weight (SW) in the cuprate superconductors as they enter the pseudogap phase has been studied. Using the linear response theory and based on the theory of d-density wave order for the pseudogap phase, the optical conductivity is calculated. It is shown that the unexpected downward transfer of the spectral weight, as observed in recent optical experiments, can be explained by considering the anisotropy of the quasiparticle scattering rate. Two different behaviors in the direction of the spectral weight shift are observed: For the (unrealistic) isotropic choice of the scattering rate, SW shifts upward, while the (realistic) anisotropic choice generates a downward SW shift, as observed in the experiment.

Rouzbeh Gerami
University of California, Los Angeles

Date submitted: 30 Nov 2004 Electronic form version 1.4