Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Fourier-Transformed Inelastic STM Tunneling into High-Temperature JIAN-XIN ZHU, A.V. BALATSKY, Theoretical Division, Los Alamos National Laboratory — There are heightened interest in relating the STM observations with other spectroscopy measurements with momentum resolution in high-T_c cuprates. We have proposed earlier that STM can be used to detect the 41 meV (π, π) mode as observed in neutron scattering experiments. Recent ARPES on optimally doped $Bi_2Sr_2Ca_{0.92}Y_{0.08}Cu_2O_{8+\delta}$ suggests an anisotropic electron-phonon coupling. Here we address the role of these phonons (O B1g mode and in-plane Cu-O breathing mode) and the Fourier-transformed STM features they might generate in the local density of states. We also look into the effect of a distributed random potential on these features. The Fourier-transformed inelastic electron tunneling spectrocopy STM would allow one to extract the Eliashberg function in both frequency and momentum space, if successful.

Jian-Xin Zhu
Theoretical Division, Los Alamos National Laboratory

Date submitted: 23 Dec 2004 Electronic form version 1.4