

Abstract Submitted  
for the MAR10 Meeting of  
The American Physical Society

**Bosonic spectral density of optimally and overdoped LSCO superconductors from optical spectroscopy** GREG EGAN, JUNGSEEK HWANG<sup>1</sup>, SARAH PURDY, JULES CARBOTTE, THOMAS TIMUSK, McMaster University, EWALD SCHACHINGER, Graz University of Technology — Optical spectroscopy on single crystals of optimally doped  $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$  ( $x=0.17$ ) show two bosonic peaks at 50 meV and 18 meV at low temperatures (30K) as reported by Hwang et al[1]. The bosonic spectrum is acquired through the Eliashberg formalism by inverting the measured optical spectra, and shows a remarkable similarity to the spin excitation spectrum achieved through inelastic neutron scattering results. The optical study is extended into the overdoped region ( $x=0.22$ ) for which detailed neutron scattering results suggest a suppression of the strong 50 meV response and a characteristic shift from 18 meV to 10 meV of the low energy response. [1] J. Hwang, E. Schachinger, J.P. Carbotte, F. Gao, D.B. Tanner, T. Timusk, Phys. Rev. Letters 100, 137005 (2008)

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Date submitted: 19 Nov 2009

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