Abstract Submitted for the MAR12 Meeting of The American Physical Society

Doping dependent study of non-equilibrium quasiparticle dynamics in the superconducting and normal state of  $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$  thin films FAHAD MAHMOOD, DARIUS TORCHINSKY, Department of Physics, Massachusetts Institute of Technology, Cambridge MA 02139, A. BOLLINGER, I. BO-ZOVIC, Brookhaven National Laboratory, NUH GEDIK, Department of Physics, Massachusetts Institute of Technology, Cambridge MA 02139 — We report on measurements of non-equilibrium quasiparticle dynamics in  $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$  thin films via ultrafast optical pump probe spectroscopy. Quasiparticles are excited into the thin films using ultrashort laser pulses. The transient change in the quasiparticle density causes a corresponding change in the reflectivity of the sample, allowing time resolved measurements of quasiparticle recombination. We describe the doping dependence of these measurements both above and below Tc and discuss their implications on the nature of the electron-boson coupling in the cuprates.

> Fahad Mahmood Department of Physics, Massachusetts Institute of Technology, Cambridge MA 02139

Date submitted: 28 Nov 2011

Electronic form version 1.4