

Abstract Submitted  
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**Infrared optical studies of symmetry breaking in cuprate superconductors over a wide doping range**<sup>1</sup> ALOK MUKHERJEE, JUNGRYEOL SEO, MUMTAZ MURAT ARIK, JOHN CERNE, State Univ of NY - Buffalo, HAO ZHANG, CHAO ZHANG, JOHN Y.T. WEI, University of Toronto, N.P. ARMITAGE, Johns Hopkins University, T. KIRZHNER, G. KOREN, Israel Institute of Technology — We explore broken symmetry states in high-temperature cuprate superconductors (HTS) using mid-infrared (MIR) polarization sensitive measurements. We measure the complex MIR Faraday angle at zero magnetic field, as a function of temperature (10 -300 K), energy (0.1- 0.4 eV) and sample orientation with respect to the incident linear polarization. The measurements are performed on a series of HTS thin films with various doping levels, grown epitaxially by pulsed laser-ablated deposition. The Faraday rotation signal is strongest in underdoped films, depending on both temperature and sample orientation, which suggests that there is linear symmetry breaking in the pseudogap region.

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