Abstract Submitted
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Probing broken symmetry states in cuprate superconductors with polarization-sensitive infrared spectroscopy[1] ALOK MUKHERJEE, MUMTAZ MURAT ARIK, JUNGRYEOL SEO, JOHN CERNE, University at Buffalo, HAO ZHANG, KE JUN XU, JOHN Y. T. WEI, University of Toronto, N.P ARMITAGE, Johns Hopkins University, T KIRZHNER, G KOREN, Technion-Israel Institute of Technology — The nature of the pseudogap state in high-temperature superconducting (HTS) cuprates has drawn a lot of attention in the past two decades. A fundamental question is whether the pseudogap is a distinct phase with its own broken symmetries. Recent optical studies in the near-IR (800 meV) [1] and THz (2-6 meV) [2] ranges have observed symmetry breaking in the pseudogap state of HTS cuprates, suggesting that the pseudogap is a distinct phase. To probe the spectral character of this broken symmetry, we have performed infrared/visible Faraday and Kerr effect measurements at zero magnetic field and various temperatures on a series of HTS cuprate thin films, grown epitaxially by pulsed laser-ablated deposition. We will present and discuss our data, primarily complex Faraday/Kerr angle as a function of energy (0.1-3 eV), temperature (10-300K) and sample orientation with respect to the incident light polarization. 1. Xia, J et.al PRL 100, 127002 (2008). 2. Lubashevsky, Y et.al PRL 112, 147001 (2014) .

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