

Abstract Submitted  
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**Pump-probe reflectivity study of competing orders in the electron doped cuprate superconductor  $\text{Nd}_{2-x}\text{Ce}_x\text{CuO}_{4+?}$** <sup>1</sup> J.P. HINTON, UC Berkeley, LBNL, J.D. KORALEK, LBNL, G. YU, University of Minnesota, E.M. MOTYAMA, Stanford University, Y.M. LU, A. VISHWANATH, UC Berkeley, LBNL, M. GREVEN, University of Minnesota, J. ORENSTEIN, UC Berkeley, LBNL — We study the electron doped cuprate superconductor  $\text{Nd}_{2-x}\text{Ce}_x\text{CuO}_{4+?}$  using optical pump-probe spectroscopy over a range of dopings including both superconducting and underdoped antiferromagnetic samples. We focus on the pseudogap (PG) response, which is observed over the entire doping range, and its interaction with superconductivity (SC). The PG response onsets below values of  $T^*$  consistent with other probes, and its time dependence exhibits scaling consistent with critical fluctuations in samples near optimal doping. Furthermore, we observe laser fluence-dependent interaction between the PG and SC responses below  $T_c$ , indicative of a repulsive interaction between superconductivity and another fluctuating order.

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