Contribution ID: **160** Type: **Poster**

Ultrafast optical study of the electron doped cuprate NCCO

Tuesday, 24 July 2012 20:00 (2 hours)

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We employed time resolved reflectivity (TRR) and transieng grating spectroscopy (TGS) to study the electron doped cuprate superconductor Nd(2-x)Ce(x)CuO4 across a broad temperature and doping range. The pseudogap (PG) response above Tc is consistent with excitation of fluctuating antiferromagnetic order, previously observed in two-magnon Raman scattering. Cooling below Tc, we see the onset of a response due to photoexcitation of superconducting quasiparticles. This SC signal coexists with the PG signal, which is partially suppressed below Tc, suggestive of competition between the SC and PG orders.

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Session Classification: Poster Session 2