

Abstract Submitted  
for the MAR08 Meeting of  
The American Physical Society

**Torque magnetometry on the electron-doped high-temperature superconductor  $\text{Pr}_{0.88}\text{LaCe}_{0.12}\text{CuO}_{4-\delta}$**  J.I. OH, P. DHAKAL, Boston College, S. LI, P. DAI, U. Tennessee, M.J. NAUGHTON<sup>1</sup>, Boston College — We have used cantilever and extraction magnetometry to measure magnetization in optimally doped *n*-type high-temperature superconductors  $\text{Pr}_{0.88}\text{LaCe}_{0.12}\text{CuO}_{4-\delta}$  ( $T_c = 24\text{K}$ ) for magnetic field aligned close to the *c*-axis, over the temperature range (4K to 300K). We observed a distinct irreversibility line below which the torque magnetization is irreversible. Also, we observed a complex torque behavior where the sign of normal state torque response with field ( $d\tau/dH$ ) is the same as that of the superconducting counterpart. From dc magnetization experiments, we conclude that superconducting torque signal arises primarily from out-of-plane diamagnetism, whereas in-plane paramagnetism dominates for the normal state.

<sup>1</sup>Supported by NSF grant DMR-0605339.

michael naughton  
boston college

Date submitted: 27 Nov 2007

Electronic form version 1.4