Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

NMR studies of $Pr_{2-x}Ce_xCuO_{4-y}$ ($x = 0.15$ and 0.17) at high magnetic field GUOQING WU, S.E. BROWN, W.G. CLARK, UCLA Physics and Astronomy, R.L. GREENE, Univ. Maryland, H. BALCI, UIUC Physics, P. KUHNS, A.P. REYES, W.G. MOULTON, NHMFL — Recent charge and thermal transport measurements on the electron- doped high-T_c superconductor $Pr_{2-x}Ce_xCuO_{4-y}$ (PCCO) show unusual behavior in the superconducting dome at the doping level going from $x = 0.15$ (optimally doped) to 0.17 (overdoped), such as quantum phase transition and electron paring symmetry changes, suggesting a possible connection between the superconductivity and other competing phases like antiferromagnetism. We report the ^{63,65}Cu-NMR spectrum in PCCO single crystals with $x = 0.17$ in a high magnetic field B_0, and contrast their properties with those of $x = 0.15$. The temperature dependence of the ^{63,65}Cu-NMR Knight shift is dominated by the negative isotropic hyperfine coupling to the field-induced Pr^{3+} ion moment, and changes little between $x = 0.15$ and 0.17. The ^{63,65}Cu-NMR linewidths are propotional to the applied magnetic field B_0, but affected by the doping, indicating the existence of other sources besides the Pr^{3+} ion moment that contributes to the static local field distribution at the Cu nuclei. The work at UCLA is supported at UCLA by NSF Grants DMR-0334869 (WGC) and 0203806 (SEB).

Guoqing Wu
UCLA Physics and Astronomy

Date submitted: 30 Nov 2005 Electronic form version 1.4