Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

High resolution ^{17}O Knight shift measurements of $HgBa_2CuO_{4+y}$ single crystals[1] ANDREW M. MOUNCE, SANGWON OH, JEONGSEOP A. LEE, W.P. HALPERIN, Northwestern University, A.P. REYES, P.L. KUHNS, National High Magnetic Field Lab, M. CHAN, J. LI, University of Minnesota, D. XIA, X. ZHAO, University of Minnesota, Jilin University, M. GREVEN, University of Minnesota — The high superconducting transition temperature and the simple tetragonal structure of $HgBa_2CuO_{4+y}$ (Hg1201) makes this material an ideal candidate to study unconventional superconductivity in the cuprates[1]. Nuclear magnetic resonance has been performed on Hg1201 single crystals which have been annealed in an ^{17}O atmosphere to achieve superconducting transition temperatures of underdoped 72 K and overdoped 76 K. Oxygen spectra are sufficiently narrow to resolve planar, apical, and dopant oxygen sites in addition to all satellite transitions of the planar and apical sites. The deconvolution of oxygen spin shifts into isotropic and axial shifts, for the underdoped crystal, shows temperature dependence in both the isotropic and axial components of the planar oxygen while the apical oxygen only has temperature dependence in the axial component. The rotational dependence of the apical oxygen shift does not indicate a predicted static local field component due to circulating orbital currents[2] which have been observed by neutron scattering.[3]
[1] Barisic, N, PRB 78, 054518 (2008). [2] Lederer, S. and Kivelson, S. A., PRB 85, 155130 (2012). [3] Li, Y., et al, Nature 455, 372 (2008).

[1]This work is supported by **DOE/BES: DE-FG02-05ER46248, DE-SC0006858** and the NHMFL by NSF and the State of Florida.

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Date submitted: 17 Dec 2012 Electronic form version 1.4