

Abstract Submitted
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Vortex Lattice Formation in High Magnetic Fields in an Underdoped Single Crystal of Hg1201 from ^{17}O NMR JEONGSEOP LEE, YIZHOU XIN, W. P. HALPERIN, Northwestern University, A. P. REYES, P. L. KUHNS, National High Magnetic Field Laboratory — The vortex lattice in $\text{HgBa}_2\text{CuO}_{4+\delta}$ forms at a vortex melting temperature, T_v , typically $\sim 40\text{K}$ for underdoped crystals with a hole doping ~ 0.11 . We present our results from ^{17}O NMR for investigation of the vortex lattice as a function of external magnetic field up to 30 T and temperature as low as 5 K. The vortex contribution to the NMR linewidth can be separated from inhomogeneous broadening by deconvolution of the normal state spectra which was measured separately above, T_v . The vortex melting temperature was measured for two underdoped samples marked by the onset of extra linewidth broadening due to the inhomogeneous magnetic field distribution from the solid vortex lattice consistent with transverse relaxation measurements. We have found evidence for a change in the vortex lattice symmetry as a function of external fields. This work was supported by the DOE BES under grant No. DE-FG02-05ER46248 and the NHMFL through the NSF and State of Florida. [1] V. F. Mitrovic, *et al.*, *Nature*, **413**, 501-504 (2001).

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