Spatial distribution of internal magnetic field in Hight- $T_c$ - superconductors with pancake vortices

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— We report here $^{17}$O $T_1$ measurements in single crystals of slightly overdoped ($T_c = 82$ K) Bi2212 at 5 K, in magnetic fields from 15 – 30 T. In previous work the internal magnetic field distribution in YBCO aligned powders at high magnetic fields has been probed by NMR imaging experiments [1]. Our results for single crystals of the highly anisotropic superconductor, BSCCO, are remarkably different, and is inconsistent with present theoretical predictions. At 5 K the system is in a 2-D vortex solid phase [2]. We conclude that the magnetic field distribution for 2-D vortices in the presence of interlayer magnetic and Josephson coupling is radically different from a London vortex lattice.