Two magnetically distinct environments in Cu-O planes in an underdoped High-Tc cuprate: La(2-x)Sr(x)CuO(4) seen via $^{17}$O NMR

ROBERT SMITH, PHILIP KUHNS, ARNEIL REYES, GREG BOEBINGER, NHMFL/FSU, TAKASHI IMAI, McMaster University, K. HIROTA, University of Tokyo — Using high magnetic fields (30T) we investigate the normal state of the underdoped superconductor La(1.885)Sr(0.115)CuO(4) using $^{17}$O NMR. The high field $^{17}$O NMR spectrum shows evidence for two distinct planar oxygen signals, $^{17}$O(p1) and $^{17}$O(p2). The Knight Shift of $^{17}$O(p1) drops linearly with decreasing temperature to zero near 60K, twice the zero field $T_C$. $^{17}$O(p2) Knight Shift drops non-linearly to zero below 40K. The $^{17}$O(p2) line broadens with decreasing temperature while $^{17}$O(p1) slightly narrows. Comparing the Knight Shift and linewidth of the two lines suggests very different magnetic environments.

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