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NMR investigation on quasi-one-dimensional purple bronze $\mathbf{Li_{0.9}Mo_6O_{17}}$ GUOQING WU, Physics, U. of West Florida, W.G. CLARK, S.E. BROWN, Phys. & Astron., UCLA, J.J. NEUMEIER, Physics, Montana State U., C.A.M. DOS SANTOS, EEL-U. São Paulo, J. MARCUS, Institut Néel, Grenoble, C. BERTHIER, M. HORVATIC, LNCMI, Grenoble — ^{7}Li-NMR measurements are reported for a single crystal of quasi-1D conductor $Li_{0.9}Mo_6O_{17}$ (lithium purple bronze) as a function of temperature (T) and applied magnetic field (B_0). The ^{7}Li-NMR spin-lattice relaxation rate ($1/T_1$) follows a Korringa relation above $\sim$ 50 K and has surprising features at lower T with 6T$\leq$ B$_0\leq$12 T. This behavior indicates a conventional electron motion in the high T metallic state with a change at lower T in the electron density of states and perhaps the correlation time. A similar behavior is also shown by ^{95}Mo $1/T_1$ measurements made at 14.8 T. The ^{7}Li-NMR spectra also show a significant inhomogeneous broadening and frequency shift across the temperature (T_{min}) where the resistivity exhibits a minimum. This indicates a substantial local field change below T_{min}. A possible scenario for the development of a field induced spin-density wave state is discussed. Noticeably, these are challenging experiments due to the long ^{7}Li spin- lattice relaxation time (T_1) and small natural abundance of ^{95}Mo in the material. It is the first reported NMR measurement for the material. This work was supported at UCLA by NSF Grants DMR-0334869 and DMR-0520552, and at MSU by NSF Grant DMR-0907036.

Guoqing Wu
Physics Department, University of West Florida

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