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Dipolar couplings in $Li_{0.9}Mo_6O_{17}$ purple bronze GUOQING WU, Yangzhou University, BING WU, Fayetteville State University — We report the study of the internal magnetic field at the atomic scale at the Li site in the quasi-one-dimensional (Q1D) metal $Li_{0.9}Mo_6O_{17}$ (purple bronze), with theoretical calculations based on the structure of its crystal lattice and the result of our ^{7}Li-NMR measurements on a single crystal sample at an externally applied magnetic field B_0 = 6 - 12 T. We find that the anisotropic dipolar couplings to the paramagnetic Mo electron spins are the dominant source of the local magnetic field at the lithium site. Other local magnetic field sources such as the dipolar couplings between the ^{7}Li-^{7}Li nuclei, isotropic contact hyperfine couplings to the Mo electron spins, and demagnetization and Lorentz fields are also estimated. Significant changes of the distribution of the dipolar couplings are observed at the "metal-insulator" crossover temperature and lower temperatures along the direction of $B_0 \parallel c$, indicating a significant local magnetic field inhomogeneity due to the spin effect from the Mo electrons. No evidence of charge effect at the "metal-insulator" crossover temperature or lower temperatures is observed.

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