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ARPES and NMTO of $Li_{0.9}Mo_6O_{17}$: Implications for Unusually Robust Quasi-One Dimensional Behavior[1] J.W. ALLEN, U. Michigan, L.M. DUDY, Uni Wuerzburg, J.D. DENLINGER, Lawrence Berkeley Nat'l Lab, J. HE, Clemsen U., M. GREENBLATT, Rutgers U., M.W. HAVERKORT, MPI Chem. Phys. Dresden, O.K. ANDERSEN, Y. NOHARA, MPI Stuttgart — $Li_{0.9}Mo_6O_{17}$ displays theoretically interesting [1] metallic quasi-one dimensional (1D) behavior that is unusually robust [2] against 3D crossover before superconductivity at $\approx$ 1.9K, and has large anomalous Luttinger liquid density-of states exponent $\alpha \approx 0.6$. We present very high resolution, low temperature (T $\approx$ 6K-26K) angle resolved photoemission spectroscopy (ARPES) data analyzed with non-linear muffin tin orbital (NMTO) Wannier function band theory. We confirm a previous conclusion [3] that the LDA agrees unusually well with ARPES, implying small Hubbard U, and find in ARPES the dispersion and Fermi surface warping and splitting expected for predicted small but long range inter-chain hoppings ($t_\perp \approx$ 10-15 meV). These various findings imply the likely importance of long range Coulomb interactions for the large α value [4] and reaffirm the great puzzle [2] of quasi-1D behavior well below the 3D crossover T implied by $t_\perp$.

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[4] P. Kopietz, V. Meden and K. Schönhammer, Phys. Rev. Lett. **74**, 2997 (1995).

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