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Large temperature renormalization of anomalous Luttinger exponent in $Li_{0.9}Mo_6O_{17}$[1] FENG WANG, S.-K. MO, J.W. ALLEN, J.V. ALVAREZ, U. of Michigan, G.-H. GWEON, Lawrence Berkeley National Lab, J. HE, U. of Tennessee, R. JIN, R. MANDRUS, Oak Ridge National Lab, H. HÖCHST, SRC, U. of Wisconsin — $Li_{0.9}Mo_6O_{17}$ is unique as a quasi-1 dimensional metal for which both photoemission spectroscopy (PES) [1] and tunneling [2] find Luttinger liquid (LL) power law behaviors in spectra near the Fermi energy E_F, albeit with differing values of the anomalous exponent α, ≈ 0.9 at temperature 300K and ≈ 0.6 below 50K, respectively. New T-dependent PES spectra from T = 300K down to 15K can be well fit by finite-T LL theory, with α varying continuously from ≈ 0.9 to ≈ 0.6, showing consistency of PES and tunneling. We find that its incommensurate Fermi wavevector would preclude such a large renormalization of α with T for $Li_{0.9}Mo_6O_{17}$ were it not for interband dynamics and residual interaction scattering that can occur only because there are two (nearly degenerate) bands crossing E_F. We also discuss implications of the theory for further experiments. [1] G.-H. Gweon et al, Phys. Rev. B **68**, 195117 (2003). [2] J. Hager et al, Phys. Rev. Lett. **95**, 186402 (2005).

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