Single particle gap in Li$_{0.9}$Mo$_6$O$_{17}$ below 26K?\footnote{Xu et al, PRL 102, 206602 (2009)} L. DUDY, J. PARK, B.J. KIM, C. KURDAK, J.W. ALLEN, Univ. of Michigan, J. HE, Clemson Univ., R. JIN, D. MANDRUS, Oak Ridge National Lab., S. SUGA, A. SEKIYAMA, Osaka Univ., H. HOECHST, SRC/Univ, of Wisconsin — The high temperature (T) behavior of Li$_{0.9}$Mo$_6$O$_{17}$ is that of a one dimensional (1D) metal so that low T charge density wave (CDW) formation could be expected. Below 26K the resistance shows an upturn, but x-ray diffraction, spectroscopic and most transport studies find no evidence for a CDW or its associated single particle gap. Angle integrated photo-emission spectroscopy (PES) down to 30K and scanning tunneling microscopy down to 5K both show a power law density of states at the Fermi energy, evidence that the 1D metal survives until superconductivity sets in at 1.9K. However recent magnetotransport studies \cite{1} motivated the proposal of an electronically stabilized CDW with a small gap (1 meV) undetected in previous work. We address this general issue with high resolution (4meV) PES down to 4K, low T transport, and higher T angle resolved PES.

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