

Abstract Submitted  
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**Quasi 1-D electronic structure of silver nanowires**<sup>1</sup> A. SEKHARAN, W. ZHAO, F. WOMACK, F. WANG, O. KIZILKAYA, R. KURTZ, P. SPRUNGER, Louisiana State University — Epitaxial Ag nanowires have been found to self-assemble on Cu(110) at coverages exceeding 1.2 ML. The low energy electronic structure of these nanowires has been characterized by ARPES. Previous STM, LEED, and LEEM data reveal that the Ag nanowires grown on Cu(110) are approximately 2 nm ( $\sim 12$  nm) in height (width). The nanowires orient with the long axis parallel to the  $[-110]$  substrate direction. The ARPES results reveal that the valence bands within the Ag nanowire are strongly anisotropic with clear band dispersion in the along-wire direction, but no dispersion in the across-wire direction. ARPES identified two low-energy electronic bands, with strong dispersion close to the Fermi energy. The first band, which crosses the Fermi energy, suggests the metallic nature of nanowires. However, there is an avoided crossing of the second band, perhaps due to many-body effects. While discussing the quasi 1-D electronic structure, we will emphasize its connection to many-body effects and the one dimensional nature of nanowires.

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