

Abstract Submitted
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Possible Dimensional Crossover in $\text{Li}_{0.9}\text{Mo}_6\text{O}_{17}$ observed through Thermal Expansion Experiments¹ CARLOS A. M. DOS SANTOS, Montana State University and Escola de Engenharia de Lorena , B. D. WHITE, Montana State University, Y.-K. YU, National Center for Biotechnology Information, J. J. NEUMEIER, J. A. SOUZA, Montana State University — During recent years much attention has been given to $\text{Li}_{0.9}\text{Mo}_6\text{O}_{17}$ which is believed to be the best-known example of a Luttinger-liquid (LL). In order to study the thermal expansion behavior of this compound prepared single crystals via flux growth using Li_2MoO_4 , MoO_2 and MoO_3 . The crystals were mechanically, chemically separated and characterized by x-ray and Laue diffraction, and electrical resistance. Thermal expansion measurements performed with a high-resolution quartz dilatometer revealed high anisotropy. Dominant a-axis thermal expansion reduces the separation of the conducting zigzag chains enhancing the interchain coupling. This is argued to destabilize the LL leading to a crossover from metallic to insulating-like behavior near 28 K and a repulsion-induced CDW. Competing electron-electron interactions support superconductivity at 1.9 K.

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