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Evidence for charge density wave order in the quasi-1D Superconductor $Ta_4Pd_3Te_{16}$ TONI HELM*[1], Lawrence Berkeley National Laboratory, University of California, Berkeley, CA, USA, ROBERT KEALHOFER, PHILIP J. W. MOLL*, ZHENGLU LI, NICHOLAS P. BREZNAY, IAN HAYES, FELIX FLICKER, University of California, Berkeley, CA, USA, ROSS MACDONALD, LUIS BALICAS, National High Magnetic Field Laboratory, USA, STEVEN LUI, JAMES G. ANALYTIS, University of California, Berkeley, CA, USA — One dimensional metals are commonly susceptible to electronic instabilities such as density waves. Only recently the ternary Chalcogenide $Ta_4Pd_3Te_{16}$ (TPT) was observed to superconduct below $T_c = 4.6\,\mathrm{K}$ [1]. Band structure calculations predict a complex multiband Fermi surface in TPT,including strongly nested quasi 1D bands[2]. Despite this one-dimensional character, no evidence for a Peierls transition has been reported and its superconductivity below T_c was suggested to be unconventional. We investigate this puzzle by high-field quantum oscillation experiments and contrast them with first-principles band-structure calculations. Our quantum oscillation experiments in high magnetic fields confirmed the presence of 2D and 3D bands. Our magnetotransport measurements on microstructures fabricated by focused ion beam etching reveal an anomaly above T_c, suggesting the onset of charge density wave ordering. [1] W. H. Jiao et al. J. Am. Chem. Soc. 136, 1284 (2014) [2] D. Singh, PRB 90, 144501 (2014)

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