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ARPES Study of Spin Spiral States in TlCo_2Se_2 ¹ HAE-KYUNG JEONG, Boston University, TONICA VALLA, Brookhaven National Lab, ROLF BERGER, Uppsala University, PETER JOHNSON, Brookhaven National Lab, KEVIN SMITH, Boston University — The electronic structure of TlCo_2Se_2 has been measured using high resolution angle resolved photoemission spectroscopy (ARPES). TlCo_2Se_2 is thought to be a spin spiral system, but experimental evidence from the electronic structure supporting the spin spiral states has been lacking. The original indication of a spin spiral state came from neutron powder diffraction experiments, and was confirmed in a subsequent neutron diffraction study of single crystals. However, it was not possible to distinguish between the helical structure and the sine-modulated moments since the intensity of the magnetic pattern satellites from neutron diffraction was very low. We used high resolution ARPES to study the electronic structure of single crystals of TlCo_2Se_2 cleaved in ultra high vacuum. Our experimental results clearly show the existence of band crossings near the Fermi level that would support spin spiral states, and reveals the predicted quasi-two dimensional electronic structure. The Boston University program is supported in part by the Department of Energy under DE-FG02-98ER45680.

¹ARPES Study of Spin Spiral States in TlCo_2Se_2

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