

Abstract Submitted  
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**Angle resolved photoemission spectroscopy study on the non-saturate magnetoresistance material  $\text{WTe}_2$**  JUAN JIANG, XIAOHAI NIU, BINPING XIE, TONG ZHANG, DONGLAI FENG, Fudan University — By performing high resolution angle-resolved photoemission spectroscopy, we obtain the detailed electronic structure of  $\text{WTe}_2$ , which has an extremely large non-saturated magnetoresistance. Unlike the simple one electron and one hole pocket as expected, we resolved a rather complicated Fermi surface in  $\text{WTe}_2$ . There is a hole pocket around the Brillouin zone center  $\Gamma$ , two hole pockets and two electron pockets along the tungsten chain direction. Thus the large magnetoresistance cannot be simply attributed to the electron-hole compensation, since this is based on a two carrier assumption model, the real case in  $\text{WTe}_2$  should be more complicated. Surprisingly, the circular dichroism ARPES result shows a strong intensity inversion between the data under the right-circular polarized light and the left-circular polarized light. This, indicates a proper different orbital angular momentum along the tungsten chain direction, which might also related to the different spin angular momentum since there're coupled with each other. Therefore, we propose that to fully understand the large magnetoresistance in  $\text{WTe}_2$ , spin channel should also be involved where backscattering are forbidden under zero field.

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