

Abstract Submitted  
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**The suppression of the large magnetoresistance in thin WTe<sub>2</sub>.** JIE SHEN, JOHN WOODS, JUDY CHA, Yale Univ — The layered nature of WTe<sub>2</sub> suggests the possibility of making a single layer WTe<sub>2</sub> memory device that exploits the recently observed large magnetoresistance. Presently, the origin of the magnetoresistance is attributed to the charge balance between the electron and hole carriers, yet the exact underlying physical mechanism is unclear. Here we show a systematic suppression of the large magnetoresistance, as well as turn-on temperature, with decreasing thickness of WTe<sub>2</sub>. We attribute the thickness-dependent transport properties to undesirable parasitic effects that become dominant in thin films of WTe<sub>2</sub>. Our results highlight the increasing importance of characterizing the parasitic effects for 2D layered materials in a single- to a few-layer thick limit. Finally, our observations support the hypothesis that the origin of the large magnetoresistance may be due to the charge balance between the electron and the hole carriers.

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