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Nonlinear edge conduction in monolayer WTe₂ TAUNO PALOMAKI, ZAIYAO FEI, WENJIN ZHAO, PAUL NGUYEN, BOSONG SUN, XI-AODONG XU, DAVID COBDEN, University of Washington — Monolayer WTe₂ was recently predicted to have an inverted band structure, giving rise to helical edge states degenerate with bulk bands. [Qian *et al.* Science 346, 1344-1347 (2014)] Although it is expected to be semimetal, experimentally we find insulating behavior in the bulk below approximately 100 K, while edge conduction remains. At lower temperatures (below ~ 20 K) we often observe a pronounced dip in the edge conductance at zero bias which is highly gate dependent. I will discuss our recent progress on understanding this zero bias anomaly through its bias voltage, gate, length, temperature, and magnetic field dependence. Possible effects of the contacts, magnetic scatterers in the edge, and electron correlations will be discussed.

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