Abstract Submitted
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Low-Temperature Transport Measurements of Multilayer WSe_2 FETs[1] L. J. STANLEY, DRAGANA POPOVIĆ, National High Magnetic Field Lab., Florida State University, HSUN-JEN CHUANG, ZHIXIAN ZHOU, Wayne State University, MICHAEL KOEHLER, The University of Tennessee, JIAQIANG YAN, DAVID MANDRUS, The University of Tennessee and Oak Ridge National Lab — Transition metal dichalcogenides (TMDs) offer an exciting new opportunity to study transport in 2D and the universality of the 2D metal-insulator-transition (MIT), but high-resistance, non-ohmic contacts have been a major impediment. Recently, however, 2D/2D low-resistance ohmic contacts have been produced on ultrathin TMD samples [1] allowing for low-temperature characterization. We report studies of WSe_2 FET samples with ~ 10 layers each, patterned into Hall bars, and with a favorably high mobility of up to ~ 0.2 m^2/Vs at ~ 5 K. Two-terminal and four-terminal conductivity (σ) measurements were performed at temperatures $0.25 \leq T(\mathrm{K}) < 200$. Our results show that contacts remain ohmic down to 0.25 K over the entire useful range of back-gate voltages V_{bg}. Furthermore, the measurements reveal a change in the sign of $d\sigma/dT$ and the form of $\sigma(T)$ with V_{bg}, strongly suggesting the existence of a 2D MIT in this system. [1] Hsun-Jen Chuang *et al.*, Nano Lett. **16**, 1896 (2016).

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