Abstract Submitted
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Low temperature electric transport properties of hydrogen-doped VO2[1] HENG JI, WILL HARDY, Rice University, HANJONG PAIK, Cornell University, JIANG WEI, Tulane University, DARRELL SCHLOM, Cornell University, DOUGLAS NATELSON, Rice University — Vanadium dioxide is a strongly correlated material with a bulk metal-to-insulator transition (MIT) near 340 K. Previous experiments have shown that hydrogen can be easily doped into this material, and stabilizes a badly metallic state of the material down to low temperatures. In this work, we present the transport properties of hydrogenated VO2 on the mesoscale at low temperatures via magneto-resistance and Hall measurements of both wire and film samples. We observed positive and negative magneto-resistance depending on crystallographic orientation, implying anisotropy of the electronic structure and scattering. We also observed apparent universal conductance fluctuation despite a high overall resistivity. Low temperature scattering time, carrier densities and other physical parameter have been inferred from the data.

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Heng Ji
Rice University

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