Abstract Submitted
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Terahertz transmission and reflection studies of the topological Kondo insulator candidate SmB_6[1] CHRISTOPHER M. MORRIS, N.J. LAURITA, S. KOOPAYEH, P. COTTINGHAM, W.A. PHELAN, L. SCHOOP, T.M. MCQUEEN, N.P. ARMITAGE, The Institute for Quantum Matter, Department of Physics & Astronomy, The Johns Hopkins University, Baltimore, MD 21218 — The Kondo insulator SmB_6 has long been known to display anomalous transport behavior at low temperatures (T< 10 K) and high pressures. At low temperatures, a plateau is observed in the resistivity, contrary to the logarithmic divergence expected for a normal Kondo insulator. Recent theoretical calculations suggest that SmB_6 may be the first topological Kondo insulator, a material with a Kondo insulating bulk, but topologically protected metallic surface states.[2] Here, time domain terahertz spectroscopy (TDTS) is used to investigate the temperature dependent optical conductivity of single crystals of SmB_6. A saturation of the transmission is observed associated with the resistance plateau as the bulk becomes insulating. A secondary bulk conduction mechanism remains down to the lowest measured temperature, 1.6 K. Additionally, FTIR measurements have been performed that show the Kondo gap of SmB_6 opening at low temperatures.

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[2]M. Dzero *et al.*, Phys. Rev. Lett. **104**, 106408 (2010)

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