Abstract Submitted
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Terahertz transmission studies of the topological Kondo insulator candidate SmB_6[1] NICHOLAS J. LAURITA, CHRISTOPHER M. MORRIS, SEYED KOOPAYEH, PATRICK COTTINGHAM, W. ADAM PHELAN, LESLIE SCHOOP, TYREL M. MCQUEEN, N. PETER 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 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 low frequency optical conductivity of single crystals of SmB_6. We find evidence for a substantial bulk conductivity at a frequency of a few hundred GHz, which challenges the notion of this material as having a clean gap. The evidence for topological surface states and their properties will be discussed.

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

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