Abstract Submitted
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Terahertz transmission studies of the topological Kondo insulator candidate SmB$_6$\textsuperscript{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.\textsuperscript{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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