Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Surface transport in Topological Kondo Insulator SmB6[1] JING XIA, SEAN THOMAS, DAE-JEONG KIM, FISK ZACH, JING XIA, University of California Irvine — In this talk we will discuss the existence of topological order in a 3D strongly correlated material SmB6, which has recently been proposed theoretically as a topological Kondo insulator. We will present transport evidence for a highly conductive surface state surrounding a truly insulating bulk: At low temperature We found that the Hall resistance scales with the surface, and is independent of the thickness. Using non-local transport measurements, we demonstrate that the electric conducting is mostly along the surface at low temperatures and in zero magnetic field. We demonstrate that the surface dominated conduction is destroyed by small amounts of magnetic doping but survives non-magnetic doping. At even lower temperatures, we demonstrate the weak localization effect, which is consistent with a surface state with spin momentum locking. The Kondo-effect-like resistance saturation will also be discussed.

[1]This work was supported by UC Irvine CORCL Grant MIIG-2011-12-8, Sloan Research Fellowship #BR2013-116 (J. X.). Crystal growth was supported by NSF grant #DMR-0801253.

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Date submitted: 07 Nov 2013 Electronic form version 1.4