

## Topological Kondo insulator SmB<sub>6</sub>: Surface states interacting with bulk spin excitons

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**DATE:** Thursday, October 26, 2017

**TIME:** 10:30 AM

**PLACE:** C2045

There is a pizza luncheon to follow at noon-1pm in 3024.

**ABSTRACT:** Samarium hexaboride (SmB<sub>6</sub>), a well-known Kondo insulator in which the insulating bulk arises from strong electron correlations, has recently attracted great attention owing to its possibly topological nature, thereby harboring protected surface states. Although there is strong evidence for this, corroborative spectroscopic evidence was lacking; unlike in the weakly correlated counterparts, e.g., Bi<sub>2</sub>Se<sub>3</sub>. Our planar tunneling spectroscopy results obtained on the (001) and (011) crystal faces reveal the linear density of states (DOS) as expected for Dirac cones. Our spectroscopic results also reveal the bulk gap, whose signature arises from spin excitons in the bulk interacting with the surface states. Above ~ 4 K, the thermal population of the spin excitons keeps the surface state from being protected. [1]

Ref: W.K. Park, L. Sun, A. Noddings, D.-J. Kim, Z. Fisk, and L.H. Greene, “Topological surface states interacting with bulk excitations in the Kondo insulator SmB<sub>6</sub> revealed via planar tunneling spectroscopy” PNAS 113, 6599-6604 (2016).

ALL ARE WELCOME!