

Abstract Submitted
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Incomplete Protection of the Surface Weyl Cones of Kondo Insulators: Spin Exciton Scattering¹ PETER RISEBOROUGH, GARY A. KAPILEVICH, ALEX GRAY, Temple Univ, MIKLOS GULACSI, Max Planck Institute for the Physics of Complex Systems, TOMASZ DURAKIEWICZ, Los Alamos National Lab, JAMES L. SMITH, Los Alamos National lab. — The material SmB_6 is a Kondo Insulator, where the lowest-energy bulk electronic excitations are spin excitons. The material also has surface states which are subjected to strong spin-orbit coupling. It has been suggested that SmB_6 is also a topological insulator. Here we show that, despite the absence of time-reversal symmetry breaking and the presence of strong spin-orbit coupling, the chiral spin texture of the Weyl cone is not completely protected. In particular, we show that the spin-exciton mediated scattering produces features in the surface electronic spectrum at energies separated from the surface Fermi-energy by the spin-exciton energy. Despite the features being far removed from the surface Fermi-energy, the features are extremely temperature dependent. The temperature variation occurs over a characteristic scale determined by the dispersion of the spin exciton. The structures may be observed by electron spectroscopy at low temperatures.

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