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# Topological Kondo Insulator SmB6

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## Abstract

Topological order is a new kind of collective order beyond Landau's symmetry-breaking classification of phases of matter. In this talk we will discuss the existence of topological order in a 3D strongly correlated material SmB6, which was discovered half a century ago, but has exotic properties that can't be explained satisfactorily within the framework of symmetry-breaking. 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. At even lower temperatures, we demonstrate the weak localization effect as well as the robustness of the surface state, which are consistent with that of a topological surface state.

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