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Competing Orders in the Surface State of Topological Kondo Insulators JEFFREY BOTIMER, DAE-JEONG KIM, SEAN THOMAS, ZACHARY FISK, JING XIA, University of California, Irvine — The recent discovery of topological (band) insulators (TI) reveals a conceptually new family of quantum materials with novel properties. The bulk energy gap closes at the surface, leading to a gap-less metallic topological surface state. Recently several Kondo insulators have been theoretically proposed in this category, dubbed "Topological Kondo Insulators" (TKI). In a TKI, the topological order arises from strong electron correlation and will display new physics. For example, various broken symmetry orders are expected to compete with the topological order. In this talk we will present electrical transport evidence for a high mobility conducting surface state, as well as magneto-optic evidence for broken time reversal symmetry at the surface of several TKI materials. These results suggest that the surface state of the TKI are not only topological but also magnetic, thus providing a convenient system to study topological magnetoelectric effects where magnetization can be induced by pure electric field.

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