Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Many-Body Effects in 2D Topological Kondo Insulators JASON IACONIS, Univ of California - Santa Barbara , LEON BALENTS, Kavli Institute for Theoretical Physics - Univ of California - Santa Barbara — Recently there has been an immense amount of interest in studying the effect of interactions on systems with a nontrivial topology. Perhaps the simplest manifestation of this phenomena, and that which is most closely related to experimental materials, can be found in the so called topological Kondo insulators. In our work we study a model of graphene which is doped with localized partially filled d-shell electron moments. We model this system using a simple Hamiltonian in which the Kondo interaction can lead to the formation of a topological insulator phase with many-body correlations. I will discuss a mean field treatment of this model where we map out the different possible interacting phases of the system. It is of particular interest to study the effect of interactions on the symmetry protected gapless edge states, as such edge states are perhaps the most dramatic consequence of having a band structure with a nontrivial topology. We discuss the possibility that the Kondo interaction leads to edge states which spontaneously break time-reversal symmetry, while preserving the symmetry within the bulk.

Jason Iaconis
Univ of California - Santa Barbara

Date submitted: 12 Nov 2014 Electronic form version 1.4