

Abstract Submitted  
for the MAR17 Meeting of  
The American Physical Society

**Scanning Tunneling Spectroscopy of 2D Topological Insulators**

JOSHUA KAHN, PAUL NGUYEN, BOSONG SUN, TAUNO PALOMAKI, JIUN-HAW CHU, DAVID COBDEN, Univ of Washington — 2D topological insulators (TIs) are an exciting new class of material, wherein band inversion in the bulk leads to topologically protected gapless edge modes. In  $WTe_2$  and  $ZrTe_5$ , two potential 2D TIs we are studying, these edge modes are confined to within tens of nanometers of the edge of the sample. Scanning tunneling spectroscopy (STS) should provide a powerful probe of these modes, and open opportunities to study the effects of gating and proximity effect due to layered superconductors, such as  $NbSe_2$  and  $FeSeTe$ , in contact with the 2D TIs. However, these measurements require extremely clean surfaces and interfaces, protection of these sensitive materials from oxidation, and the ability to position the tip accurately on the substrate. To satisfy these requirements and allow STS, we must prepare everything away from air and encapsulate in monolayer hBN. We present our progress in developing these techniques, and some preliminary measurements.

Joshua Kahn  
Univ of Washington

Date submitted: 10 Nov 2016

Electronic form version 1.4