Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Single surface state at a strongly correlated electronic structure in Na_2IrO_3: a candidate d-electron topological insulator QIANG WANG, University of Colorado at Boulder, Los Alamos National Laboratory, YUE CAO, JUSTIN WAUGH, University of Colorado at Boulder, TONGFEI QI, OLEKSANDR KORNETA, GANG CAO, University of Kentucky, DANIEL DESSAU, University of Colorado at Boulder — We have performed angle-resolved photoemission spectroscopy (ARPES) on Na_2IrO_3, a 5d transition metal oxide (TMO) which is a strong insulator with a honeycomb lattice structure and has been theoretically proposed as a candidate for a new class of topological insulators (TIs). The near E_F electronic structure of Na_2IrO_3 was carefully mapped, which shows an overall agreement to the first-principle calculations with spin-orbit (SO) coupling and electron correlation (U), though certain discrepancy remains. Specifically, we found an extra electron-like pocket near the Fermi level with Dirac-cone-like dispersion around Γ point. The further photon energy dependent studies show no k_z-dispersion of this electron-like pocket, and the metal deposition studies show a great enhancement and sharpening of this feature. These results confirm its surface state nature and suggest a possible single topological surface state at the Brillouin zone (BZ) center in Na_2IrO_3.

Qiang Wang
Los Alamos National Laboratory

Date submitted: 08 Nov 2012 Electronic form version 1.4