Abstract Submitted for the MAR13 Meeting of The American Physical Society

Imaging single-atom impurities in topological materials¹ MICHAEL YEE, ANJAN SOUMYANARAYANAN, YANG HE, Department of Physics, Harvard University, D. GARDNER, Y.S. LEE, Department of Physics, Massachusetts Institute of Technology, Z. SALMAN, Laboratory for Muon Spin Spectroscopy, Paul Scherrer Institute, A. KANIGEL, Department of Physics, Technion - Israel Institute of Technology, Y. ANDO, Institute of Scientific and Industrial Research, Osaka University, J.E. HOFFMAN, Department of Physics, Harvard University — We use low temperature spectroscopic scanning tunneling microscopy to study topological materials in which the surface states are protected by time reversal symmetry. We image the local density of states around a variety of single-atom impurities in the presence of a magnetic field. On a subset of these impurities, we observe broad peaks in the local density of states at energies around the Dirac point. Furthermore, we use Landau level spectroscopy and quasiparticle scattering to discuss the interplay between impurities and the surface states.

¹This research was supported by the NSF (DMR-1106023), NSERC (MY), A*STAR (AS), and the New York Community Trust - George Merck Fund (YH).

Michael M. Yee Department of Physics, Harvard University

Date submitted: 11 Dec 2012

Electronic form version 1.4