Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Spin Polarization Measurements of Ferromagnetic Atomic Chains on a Supercondcutor: Part II[1] SANGJUN JEON, YONGLONG XIE, ILYA K. DROZDOV, JIAN LI, B. ANDREI BERNEVIG, ALI YAZDANI, Princeton University — A key property of the Majorana fermions edge mode when realized at the edge of a topological superconductor is their spin. Unlike other low energy excitation in a conventional superconductor, which are made up of time-reverse partners of up and down spin, Majorana is expected to have a definite spin orientation. We utilize the technique of spin-polarized STM as described in the last talk to probe the nature of Majorana excitations in chains of Fe atoms on the surface of Pb. Previous effort on this system has detected signature of Majorana as a zero bias peak at end of such chains [1]. While this previous study shows evidence of ferromagnetism and spin-orbit coupling in such atomic chains on Pb, they did not probe the spin properties of the end mode specifically. We describe energy-resolved spin-polarized STM experiments designed to probe whether the previously reported zero energy end modes are spin-polarized or not. [1] Stevan Nadj-Perge, Ilya K. Drozdov, Jian Li, Hua Chen, Sangjun Jeon, Jungpil Seo, Allan H. MacDonald, B. Andrei Bernevig and Ali Yazdani, Science, 346, 602 (2014)

[1]Work supported by ONR and the Moore Foundation.

Sangjun Jeon
Princeton University

Date submitted: 04 Nov 2015 Electronic form version 1.4