

Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Anisotropic tunneling between spin-polarized tips and substrate with strong spin-orbit coupling YONGLONG XIE, SANGJUN JEON, ILYA DROZDOV, JIAN LI, ANDREI BERNEVIG, ALI YAZDANI, Princeton Univ — The ability to measure spin structure on the nanometer scale has attracted substantial interest for a long time. Spin-polarized scanning tunneling microscopy (SP-STM) is an excellent tool for studying fundamental aspect of magnetism at atomic scale. We combine a low temperature STM equipped with a vector magnet and a spin-polarizable tip, to probe superconductors with strong spin-orbit coupling such as Pb, which is emerging as a platform for engineering topological superconductivity [1]. We observe anisotropic tunneling conductance between tip and substrate as a function of the angle of applied in-plane magnetic field. This finding suggests that SP-STM may provide a tool to locally measure spin-orbit coupling, even in non-magnetic substrates. [1] S. Nadj-Perge, I.K. Drozdov, J. Li, H. Chen, S. Jeon, J. Seo, A.H. Macdonald, B.A. Bernevig, A. Yazdani, *Science* **346**,602 (2014)

Yonglong Xie
Princeton Univ

Date submitted: 13 Nov 2014

Electronic form version 1.4