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Spin polarization measurements of ferromagnetic atomic chains on a superconductor: Part I[1] YONGLONG XIE, SANGJUN JEON, ILYA DROZDOV, JIAN LI, ANDREI BERNEVIG, ALI YAZDANI, Princeton Univ — Introduction of magnetic defects in superconductors gives rise to spin polarized in-gap Shiba states. Recently chains of magnetic atoms, which give rise to a band of Shiba states, have been proposed as a platform for topological superconductivity. Spectroscopic evidence for in-gap Shiba states and Majorana end mode has been reported in previous studies of self-assembled chains of ferromagnetic Fe atoms on the surface of Pb[1]. In this talk, we introduce the technique of spin-polarized scanning tunneling microscopy and spectroscopy (SP-STM) and discuss how we prepare tips that can show spin contrast at zero magnetic field, without disrupting superconductivity on the Pb surface. We use this technique, combined with the use of a vector magnet to orient the tip magnetization to probe the spin polarization of the Shiba states induced by the Fe atomic chains onto the Pb surface. A key to interpreting such experiments with spin-polarized STM tip is to understand the role of spin-polarization in the setpoint effect, which will be discussed in the next talk. [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)

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