Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Hybrid Quantum Point Contact-Superconductor Devices Using InSb Nanowires STEPHEN GILL, JOHN JEFFREY DAMASCO, University of Illinois at Urbana-Champaign, DIANA CAR, ERIK BAKKERS, Eindhoven University of Technology, NADYA MASON, University of Illinois at Urbana-Champaign — Recent experiments using hybrid nanowire (NW)-superconductor (SC) devices have provided evidence for Majorana quasiparticles in tunneling experiments [1,2]. However, these tunneling experiments are marked by a soft superconducting gap, which likely originates from disorder at the NW-SC interface [3]. Hence, clean NW-SC interfaces are important for future Majorana studies. By carefully processing the NW-SC interface, we have realized quantized conductance steps in quantum point contacts fabricated from InSb NWs and superconducting contacts. We study the length dependence of ballistic behavior and the induced superconductivity in InSb NWs by quantum point contact spectroscopy. Additionally, we discuss how the transport in InSb NW-SC quantum point contacts evolves in magnetic field.

References: 1. V. Mourik et al, Science 336, 1003 (2012). 2. A. Das et al, Nature Phys. 8, 887 (2012). 3. S. Takei et al, Phys. Rev. Lett. 110, 186803 (2013).

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Date submitted: 06 Nov 2015 Electronic form version 1.4