

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Proximity-induced unconventional superconductivity in hybrid superconductor-topological insulator devices¹ ERIK HUEMILLER, CAN ZHANG, DAVID HAMILTON, GILBERT ARIAS, University of Illinois at Urbana/Champaign, MARTIN STEHNO, University of Twente, DALE VAN HARTLINGEN, University of Illinois at Urbana/Champaign — Topological insulators in proximity to an s-wave superconductor or doped into a bulk superconducting state have been predicted to exhibit signatures of unconventional superconductivity. These system have been predicted to show signatures of a p-wave like superconducting order parameter, but the pairing symmetry has not been definitively confirmed by experiment. We will present ongoing work on Josephson interferometry measurements to probe the superconducting order parameter in Nb-Bi₂Se₃ interfaces and in NbxBi₂Se₃ crystals. We also investigate the transport properties in these materials by measuring local and non-local resistance using two and three terminal devices. We see signatures of a p-wave superconducting order parameter in the conductance of both systems and an unusual asymmetrical non local response that may result from the topological nature of the system.

¹This work supported by the National Science Foundation under Grant NSF DMR 14-11067 and was carried out in part in the Frederick Seitz Materials Research Laboratory Central Research Facilities, University of Illinois.

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Date submitted: 11 Nov 2016

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