Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Conductance Spectroscopy of Nb-doped Bi_2Se_3[1] C. KURTER, Missouri University of Science and Technology, A. D. K. FINCK, University of Illinois, Y. QUI, Missouri University of Science and Technology, E. HUEMILLER, A. WEIS, University of Illinois, J. MEDVEDEVA, Missouri University of Science and Technology, P. GHAEMI, The City College of New York, Y. S. HOR, Missouri University of Science and Technology, D. J. VAN HARLINGEN, University of Illinois — Doped topological insulators provide a promising platform to study 3D topological superconductivity with unconventional pairing symmetry. We present Andreev reflection spectroscopy on Nb-doped Bi_2Se_3, a candidate 3D topological superconductor. Our samples consist of thin, exfoliated pieces contacted by normal metal leads with varying contact transparency. Broad zero bias conductance peaks of low contact resistance samples reveal clear signatures of Andreev reflection as well as pronounced conductance dips at the superconducting energy gap that cannot be described by the conventional BTK theory. At the lowest temperatures, additional Andreev reflection features appear at low energy signifying the existence of two distinct gaps. There is a strong anisotropy of the upper critical magnetic field between in-plane and out-of-plane directions, suggesting that the thin flakes are in the quasi-2D limit. We discuss our results in the context of p-wave pairing in doped topological insulators.

[1]CK, ADKF, and DJVH acknowledge funding from Microsoft Station-Q. YSH and YQ acknowledge the support from the NSF under grant DMR-1255607.

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Date submitted: 11 Nov 2016 Electronic form version 1.4