Abstract Submitted
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Andreev Reflection Spectroscopy on Single Crystals of Bismuth-Chalcogenide Topological Insulators[1] CHRIS GRANSTROM, IGOR FRIDMAN, J.Y.T. WEI, University of Toronto, HECHANG LEI, CEDOMIR PETROVIC, Brookhaven National Laboratory — Topological insulators have received great research interest in recent years. One salient feature of these materials is the helical spin polarization of their electronic surface states. Andreev reflection, a fundamental process that occurs between a superconductor and conducting material, has often been used to probe the spin polarization of various magnetic materials [1,2]. In this work, we use superconducting Nb tips to make cryomagnetic Andreev reflection spectroscopy measurements on bismuth-chalcogenide single crystals. We analyze our spectral data, which show Andreev-like features, in the context of both calculated and measured spin-dependent band structures of these topological insulators. [1] B. Nadgorny, Handbook of Spin Transport and Magnetism (Taylor and Francis, New York, 2011), p. 531. [2] C. S. Turel et al., Appl. Phys. Lett. 99, 192508 (2011)

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