

Abstract Submitted
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Probing proximity-induced superconductivity in superconductor-topological Insulator devices via Josephson Interferometry¹ ERIK D. HUEMILLER, AARON D. K. FINCK, University of Illinois at Urbana/Champaign, CIHAN KURTER, Missouri University of Science and Technology, DALE J. VAN HARLINGEN, University of Illinois at Urbana/Champaign — We are exploring the nature of the proximity-induced order in 3D topological insulators in contact with an s-wave superconductor by phase-sensitive Josephson interferometry. It is predicted that the proximity region should have p-wave pairing symmetry with spin-dependent chiral components. To test this, we compare the behavior of edge and corner junctions on a patterned bilayer of Nb and Bi₂Se₃ to determine the phase anisotropy that should reflect a mixture of the s and p components. The alternate approach discussed will be measurement of the supercurrent properties in arrays of superconducting islands patterned on top of the topological insulator, which is sensitive to both the current-phase relation of the junctions and the array geometry.

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