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Probing the Superconducting Proximity Effect in a Topological Insulator Using Scanning Tunneling Microscopy IAN DAYTON, Department of Physics & Astronomy, Michigan State University, MATTHIAS MUENKS, Max Planck Institute for Solid State Research, ERIC GOODWIN, Department of Physics & Astronomy, Michigan State University, DUCK-YOUNG CHUNG, Materials Science Division, Argonne National Laboratory, ALEX LEVCHENKO, Department of Physics & Astronomy, Michigan State University, MERCOURI KANATZIDIS, Department of Chemistry, Northwestern University, STUART TESSMER, Department of Physics & Astronomy, Michigan State University — Topological insulators (TI) embody a new state of quantum matter characterized by topological invariants; this contrasts with superconductors (S), as superconductivity arises from a spontaneously broken symmetry of the underlying electron system. When a superconductor is placed on the surface of a topological insulator, the behavior of the superconducting condensate across the S/TI interface offers the opportunity to study the interplay between these two distant quantum states. In this talk, we present cryogenic Scanning Tunneling Microscopy measurements to probe the local density of states in proximity to Pb/Bi2Se3 interfaces.

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