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Proximity Effect in a Topological Insulator on a Cuprate d-wave Superconductor[1] TONICA VALLA, Brookhaven Natl Lab, TURGUT YILMAZ, University of Connecticut, IVO PLETIKOSIC, Princeton University & Brookhaven Natl Lab, ANDREW WEBER, GENDA GU, ELIO VESCOVO, Brookhaven Natl Lab, BORIS SINKOVIC, University of Connecticut — Proximity induced s-wave superconductivity in a 3D topological insulator (TI) represents a new avenue for observing zero-energy Majorana fermions inside the vortex cores. A relatively small gap and a low transition temperature of conventional s-wave superconductors put the hard constraints on these experiments. Larger gaps and higher transition temperatures in cuprate superconductors would significantly relax these constraints, but with intrinsic zero-energy modes in vortex cores, it is not clear if Majorana fermions could be resolved. Here, we present our angle-resolved photoemission studies of thin TI films grown *in-situ* on optimally doped Bi2212 substrates. We discuss the obtained thickness dependence and the symmetry of the gap induced in the topological surface state on the prospects of detecting Majorana modes in such systems.

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