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**Self-consistent study at the superconductor-3D topological insulator interface** XIAOTING ZHOU, CHEN FANG, JIANGPING HU, Purdue University — We perform a theoretical study of the interface between a 3D topological insulator (TI) and an s-wave conventional superconductor (both in normal and superconducting state) using the BdG self-consistent formulation. The robustness of the TI surface state when in contact with a metal is discussed and the topological superconductivity on the interface induced by the proximity effect is studied in detail. We find that in general a mixed singlet and triplet pairing can be observed on the interface as the spin-orbit coupling breaks the SU(2) symmetry in TI. The Majorana edge states of such a mixed pairing 2D topological superconductor are also studied.

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