

Abstract Submitted
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Josephson Tunneling between Superconducting Topological Surface States LIN LI, HUI ZHANG, University of Waterloo, XIAO-DONG MA, University of Science and Technology of China, GEORGE NICHOLS, SANGIL KWON, DAVID CORY, University of Waterloo, CHANG-GAN ZENG, University of Science and Technology of China, GUO-XING MIAO, University of Waterloo — Proximity at the interface of a 3D topological insulator (TI) and a conventional s-wave superconductor can induce a 2D topological superconducting state. We grew s-wave superconductor (Nb)/TI (Bi-Sb-Te)/s-wave superconductor(Nb) heterostructures using molecular beam epitaxy (MBE) and fabricated sandwich typed Josephson junctions. Through the superconducting proximity effect, we realized topological superconducting surface states on both the top and bottom surfaces of the topological insulator film. Transport measurements showed an anomalous zero-bias conductance peak (ZBCP) at 135mK, in addition to the conventional Josephson effect between the two superconductor leads. This suggests Josephson tunneling occurs between the two proximity-driven topological surface states.

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