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Robustness of Topological Superconductivity in Proximity-Coupled Topological Insulator Nanoribbons PIYAPONG SITTHISON, TUDOR STANESCU, West Virginia University — A numerical study of low-energy physics of topological insulator(TI) nanoribbon proximity-coupled to s-wave superconductors(SCs) shows that induced gap is strongly band-dependent and collapses for low amplitude bands at the interface. The surface-type bands have most of their weight near the top or the bottom surface of the nanoribbon. It suggests that single interface TI-SC could experience a collapse of the induced gap. On the other hand, the nanoribbons sandwiched between two superconductors are capable of realizing the full potential of TI-based structures to harbor robust topological superconducting phases.

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