

Abstract Submitted
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Majorana fermions in topological insulator nanoribbons with multiband occupancy PIYAPONG SITTHISON, TUDOR STANESCU, Department of Physics, West Virginia University — We present the phase diagram of a topological insulator nanoribbon with proximity-induced superconductivity as function of the chemical potential and the Zeeman field applied parallel to the ribbon. We find that, in doped topological insulator systems, both surface-like and bulk-like states contribute to the low-energy physics and that proximity-induced quantities, such as the induced superconducting pair potential, have different energy scales in these channels. We study the effect of this band-specific proximity coupling on the properties and the stability of Majorana zero-energy bound states in multiband topological insulator nanoribbons.

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