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Experimental consequences of candidate pairings for superconducting topological insulators. LEI HAO, Department of Physics and Texas Center for Superconductivity, University of Houston, TING-KUO LEE, Institute of Physics, Academia Sinica, WEI-FENG TSAI, Department of Physics, National Sun Yat-sen University, JUN WANG, Department of Physics, Southeast University, CHIN-SEN TING, Department of Physics and Texas Center for Superconductivity, University of Houston — Genuine pairing symmetry of the superconducting topological insulators, including $Cu_xBi_2Se_3$, Bi_2Se_3, and Bi_2Te_3, are under debate. In this work, we make an extensive comparison on the experimental consequences of several candidate pairings. The physical quantities studied include the surface spectral functions, the surface local density of states, and the electronic thermal conductivities. Apparent differences in the results are found and can be used to identify the actual pairing symmetry. In particular, for model and parameters used in this work which are obtained by fitting first-principles calculations, we get interesting new results such as a segmental flat band of surface Andreev bound states for a spin-singlet pairing. A combination of several experimental techniques should be able to identify the genuine pairing symmetry.

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