

Abstract Submitted
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Proximity effects at semiconductor/topological insulator interfaces¹ GUFENG ZHANG, JIE WANG, Univ. of Sci. & Tech. of China, XIAOGUANG LI, Fudan Univ., Shanghai, China, U of Tennessee, Univ. of Sci. & Tech. of China, DIMITRIE CULCER, Univ. of Sci. & Tech. of China, ZHENYU ZHANG, Univ. of Sci. & Tech. of China, Harvard Univ. — Using phenomenological model Hamiltonians, we study the spatial distribution of topological surface states (TSS) in semiconductor/topological insulator (TI) heterostructures. Due to proximity effects induced by the TI substrate, the location of the TSS can be shifted perpendicularly to the interface. We show that both the direction and magnitude of the shift can be tuned by the cooperative effects of the spin-orbit coupling within the hybrid system, the bandgap of the overlayer, and the thickness of the overlayer. Potential technological applications of these salient properties of the TSS will also be discussed.

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Xiaoguang Li
Fudan Univ., Shanghai, China, U of Tennessee,
Univ. of Sci. & Tech. of China

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