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Hidden topological surface states on SnTe (111) surface JIAN-FENG WANG, JUNWEI LIU, WENHUI DUAN, Tsinghua University — Abundant and interesting properties of topological crystalline insulator SnTe (111) surface have been studied here. Using first-principles calculations, we show the stable structures and their related topological surface states (TSS) under different growth conditions. Surface reconstruction can induce the TSS type transition. More interestingly, the position of TSS can be hidden deeply below the surface, which depends on the interlayer relaxation. The underlying mechanism can be understood by the distortion-induced topological phase transition. Our work paves the way to control the TSS, especially to realize the physical protection in real environment.

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