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Modulation of the surface states of SnTe films by doping impurities[1] CHI-HSUAN LEE, CHIH-KAI YANG, National Chengchi University — Electronic structures of SnTe films doped by impurities are investigated using density functional calculations. There are surface states crossing the Fermi level in bulk SnTe, which is a topological crystalline insulator. For thin SnTe films, however, an energy gap is opened due to quantum tunneling. The gap can be reduced and even eliminated by doping impurities at the surfaces of the films, all the while keeping the mirror symmetry associated with bulk SnTe intact. Impurities with magnetic moments, on the other hand, can destroy the mirror symmetry.

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