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**Two types of Dirac-cone surface states on the (111) surface of the topological crystalline insulator SnTe** YUSUKE TANAKA, TAKUYA SHOMAN, KOSUKE NAKAYAMA, Department of Physics, Tohoku University, SEIGO SOUMA, WPI Research Center, Advanced Institute for Materials Research, Tohoku University, TAKAFUMI SATO, Department of Physics, Tohoku University, TAKASHI TAKAHASHI, WPI Research Center, Advanced Institute for Materials Research, Tohoku University, MARIO NOVAK, KOUJI SEGAWA, YOICHI ANDO, Institute of Scientific and Industrial Research, Osaka University — We have performed angle-resolved photoemission spectroscopy (ARPES) on the (111) surface of the topological crystalline insulator SnTe. Distinct from a pair of Dirac-cone surface states across the  $\bar{X}$  point of the surface Brillouin zone on the (001) surface, we revealed two types of Dirac-cone surface states each centered at the  $\bar{\Gamma}$  and  $\bar{M}$  points, which originate from the bulk-band inversion at the  $L$  points. We also found that the energy location of the Dirac point and the Dirac velocity are different from each other. This ARPES experiment demonstrates the surface states on different crystal faces of a topological material, and it elucidates how mirror-symmetry-protected Dirac cones of a topological crystalline insulator show up on surfaces with different symmetries.

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