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[632] Deep insight into the electronic structure of ternary topological insulators: A comparative study of PbBi_4Te_7 and $\text{PbBi}_6\text{Te}_{10}$

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Topological insulators have emerged as a novel quantum state of matter[1,2]. The Dirac-like surface state and the peculiar spin-texture play an essential role in manipulating spin-polarization and spin-current. For future topological-based devices, a fine tailoring of electronic properties and robustness against air exposure are required. An innovative approach may rely on lead-based ternary chalcogenides[3,4]. By performing detailed ARPES and STM investigations of PbBi_4Te_7 and $\text{PbBi}_6\text{Te}_{10}$, we provide evidence of coexisting topological surface states (TSSs) due to different surface terminations and Rashba-like split states close to the Fermi level. TSSs and Rashba-like states display a prevalent two-dimensional character and are barely affected by air exposure. XPS measurements and DFT simulations suggest Rashba-like states stem from van der Waals gap expansion.

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