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【506】Unveiling the Electronic Properties of α-SnTe: From Ferroelectric Distortion to Unexpected Topological Surface State

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α-SnTe(111), a semiconducting and ferroelectric material, exhibits unique topological behavior. At room temperature, its rocksalt structure enables a metallic topological surface state. However, below a critical temperature, a structural distortion suppresses this state, leading to a macroscopic ferroelectric polarization and significant Rashba splitting. Firstly, using ARPES, we can follow the thermal evolution of the Rashba splitting as an indicator of the distortion to provide insights into the ferroelectric transition. Secondly, using time-resolved ARPES, we can also restore an ultrashort-lived topological state while the atomic structure remains distorted, photoinducing this way a topological state that coexists with a ferroelectric structure.

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