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Topological phase transition in thin-film topological crystalline insulators AI YAMAKAGE, HIDEYUKI OZAWA, MASATOSHI SATO, YUKIO TANAKA, Department of Applied Physics, Nagoya University — Topological crystalline insulator is one of the recent breakthrough ideas [1], in which Dirac fermions on the surface protected by crystalline symmetry, not by time-reversal symmetry. Another direction of the topological expansion is nanofabrication. In this work, we reveal the topological phase diagram of a thin-film topological crystalline insulator $Pb_xSn_{1-x}Te$. Odd numbers of layers of $Pb_xSn_{1-x}Te$ exhibit the topological phase transition between two-dimensional trivial and topological crystalline insulators protected by the mirror-Chern number, which is consistent with the previous work [2]. In addition, we have found a new topological phase in the even numbers of layers, which is protected by the glide symmetry [3]. This glide topological phase can be realized in the thin film not in the bulk system.

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