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Autore	Takahashi Ryuji
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Note generali	'Doctoral Thesis accepted by Tokyo Institute of Technology, Tokyo, Japan.'
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Introduction -- Topological Invariant and topological Phases -- Gapless Interface States between Two Topological Insulators.- Weyl Semimetals in a Thin Topological Insulator -- Summary and outlook -- Properties of the Chern numbers -- Calculation for the interface Fermi loops.
Sommario/riassunto	In this book, the author theoretically studies two aspects of topological states. First, novel states arising from hybridizing surface states of topological insulators are theoretically introduced. As a remarkable example, the author shows the existence of gapless interface states at

the interface between two different topological insulators, which belong to the same topological phase. While such interface states are usually gapped due to hybridization, the author proves that the interface states are in fact gapless when the two topological insulators have opposite chiralities. This is the first time that gapless topological novel interface states protected by mirror symmetry have been proposed. Second, the author studies the Weyl semimetal phase in thin topological insulators subjected to a magnetic field. This Weyl semimetal phase possesses edge states showing abnormal dispersion, which is not observed without mirror symmetry. The author explains that the edge states gain a finite velocity by a particular form of inversion symmetry breaking, which makes it possible to observe the phenomenon by means of electric conductivity.

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