

Abstract Submitted
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Phase Transition Between a Chern Insulator and a Quantum Spin Hall Insulator in five-dimensional Quantum Systems¹ MINGYUAN HE, Shenzhen JL Computational Science and Applied Research Institute, Shenzhen, China, QI ZHOU, Department of Physics and Astronomy, Purdue University, West Lafayette, IN, 47907 — Chern insulator and Quantum spin Hall insulator are the two distinct topological states in condense matter and cold atom systems that have attracted great attentions in recent years. In this talk, I will point out a model that can realize the phase transition between a Chern insulator and a Quantum spin Hall insulator in the reduced space of a five-dimensional quantum system. Moreover, we show that the phase transition is not only characterized by the first Chern number, but also the second Chern number. Furthermore, I will show that such phase transition between different topological states that belong to specific Chern class can be generalized to $2N + 1$ -dimensional quantum systems. Such phase transitions provide physicists a way to explore the connect between topological states of different Chern classes.

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