



量子物理学・ナノサイエンス第 299 回セミナー

Delocalization Transition of Disordered Axion Insulator

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- 日程** : 10月26日(月) 10:00-
- 場所** : Zoom*

概要

The axion insulator is a higher-order topological insulator protected by inversion symmetry. We show that under quenched disorder respecting inversion symmetry on average, the topology of the axion insulator stays robust, and an intermediate metallic phase in which states are delocalized is unavoidable at the transition from an axion insulator to a trivial insulator. We derive this conclusion from general arguments, from classical percolation theory, and from the numerical study of a 3D quantum network model simulating a disordered axion insulator through a layer construction. We find the localization length critical exponent near the delocalization transition to be $\nu = 1.42 \pm 0.12$. We further show that this delocalization transition is stable even to the weak breaking of the average inversion symmetry, up to a critical strength. We also quantitatively map our quantum network model to an effective Hamiltonian and its low energy $k \cdot p$ expansion.

*本 ZOOM セミナーに参加されます場合には、事前に下記より登録を済ませてください。

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