## Abstract

The way of non-Hermiticity appearance matters for the system topology. In this talk, we review our recent progresses in non-Hermitian topological phases. We first show the breakdown of conventional bulk-boundary correspondence and explain it from the aviewpoint of non-Hermitian Aharonov-Bohm effect. We show that the inversion symmetry and combined-inversion symmetry play an important role for the validity of conventional bulk-boundary correspondence. Then, we will talk about that the topological phase transition, the topological invariant, and the existence of edge states may not be altered, being independent of the non-Hermitian phase transition, if the non-Hermiticity is properly introduced. Finally, we will show a graphic approach proposed for the visualization of topological phases. The rich topological phases of either Hermitian or non-Hermitian band touching, and either trivial or nontrivial phases are distinguishable from the eigenstate graphs.