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**Unitary engineering of two- and three-band Chern insulators**  
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Sungkyunkwan University — In this talk, we discuss how to engineer the topological number and ordering in some two- and three-band Chern insulators. First, we investigate a way to extend the unit Chern number of a two-band lattice model such as Haldane model and Bernevig-Hughes-Zhang model to the one in possession of higher Chern numbers, relying crucially on the monopole number-changing unitary transformations. The scheme is generalized to a class of three-band model Hamiltonian where the a pair of monopole charges can be introduced to manipulate the Chern numbers of each band.

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