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【634】 From a 4D Dirac model to the boundary physics of 2D lattices

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Topological insulators are commonly described using dimensional reduction from higher dimensional systems, e.g., charge transport in 1-dimensional Thouless pumps is mapped by dimensional reduction to the 2-D quantum Hall effect. Recently, a class of 2-dimensional lattices has emerged where localized modes exist not only on the edges (1D) but also on the corners (0D). In this talk, I will present how these localized states can be understood from the boundary physics of a 4-dimensional Dirac model. Using the same paradigm of dimensional reduction, I will show that the variety of recently proposed 2-D models stems from the 4-dimensional symmetry of the parent model, in addition to finding a novel 2-D model with 0-D corner modes.

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