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【258】 Bulk-Edge Duality and Complete Localization for Chiral Chains

Wednesday 23 August 2017 16:00 (15 minutes)

We study 1D insulators obeying a chiral symmetry in the single-particle picture where the Fermi energy is assumed to lie within a mobility gap. Topological invariants are defined for infinite (bulk) or half-infinite (edge) systems, and it is shown that for a given bulk system with N.N. hopping, the invariant is equal to the induced-edge-system's invariant. We also give a new formulation of the topological invariant in terms of the Lyapunov exponents of the system, which sheds light on the conditions for topological phase transition extending to the mobility gap regime. Finally we give a proof of complete dynamical localization for our model via Furstenberg's theorem and the fractional moments method, which justifies the deterministic assumptions we make.

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