Laboratoire de Physique Théorique et Hautes Energies

Unité Mixte de Recherche (UMR 7589) de Sorbonne Université et du CNRS

SEMINAIRE du LPTHE

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ETH Zurich

Bulk-edge correspondence in Floquet topological systems

Floquet topological insulators describe independent electrons on a lattice driven out of equilibrium by a time-periodic Hamiltonian, beyond the usual adiabatic approximation. In dimension two such systems are characterized by integer-valued topological indices associated to the unitary propagator, alternatively in the bulk or at the edge of a sample. In this talk I will give new definitions of the two indices, relying neither on translation invariance nor on averaging, and show that they are equal. In particular disorder and defects are intrinsically taken into account, even in the mobility gap regime. Finally indices can be defined when two driven sample are placed next to one another either in space or in time, and then shown to be equal. The edge index is interpreted as a quantized pumping occurring at the interface with an effective vacuum, and can also be estimated numerically.

Bibliothèque du LPTHE, tour 13/14, 4ème étage

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