



Contribution ID: 335

Type: **Talk**

【145】 Quantised topological invariants and topological pumping in a one-dimensional open quantum system

Thursday, 2 September 2021 15:45 (15 minutes)

We employ the Ensemble Geometric Phase (EGP) - a generalisation of the Zak phase to mixed states - to analyse the topology of an open Su-Schrieffer-Heeger model involving both unitary Hamiltonian dynamics and dissipative coupling. For dissipation described by the Lindblad formalism, we discover regimes where the EGP is quantised to zero or π , and relate the quantisation to the existence of an inversion symmetry. Furthermore, we devise topological charge pumping protocols by sequentially tuning hopping and system-bath couplings and realising an interplay between unitary dynamics and dissipation. We investigate the fate of this quantisation to situations of finite temperature through the Redfield master equation.

Primary authors: Prof. COOPER, Nigel (University of Cambridge); MOLIGNINI, Paolo (University of Cambridge)

Presenter: MOLIGNINI, Paolo (University of Cambridge)

Session Classification: Condensed Matter Physics

Track Classification: Condensed Matter Physics (KOND)