Abstract

Condensed Matter

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Beyond Diophantine Wannier diagrams: gap labelling for Bloch-Landau Hamiltonians

Joint work with H. Cornean and D. Monaco

In 1978 Wannier discovered a Diophantine relation expressing the integrated density of states of a gapped group of bands of the Hofstadter Hamiltonian as a linear function of the magnetic field flux with integer slope. I will show how to extend this relation to a gap labelling theorem for any 2D Bloch-Landau Hamiltonian operator and to certain non-covariant systems having slowly varying magnetic fields. The integer slope will be interpreted as the Chern character of the projection onto the space of occupied states.