

Refael, Gil: *"Floquet insulating states in periodically driven solid-state systems"*

A periodic drive could change the nature of a quantum system. A semiconductor could turn into a Floquet topological phase, and the drive may even promote superconductivity. Particularly, the periodic drive reorganizes the orbitals in the problem into Floquet orbitals. The characteristics of the driven system, however, depend also on the type of steady state it reaches, and whether it is well described by the occupation numbers of the Floquet orbitals. In my talk I will briefly explore the type of Floquet phases we hope to obtain. I will then use recent simulation results, to show how an aptly tailored phonon bath and an energy-filtered lead, are capable of controlling the chemical potential and temperature of a Floquet semiconductor. Furthermore, our results show the steady state of the system always has particles and holes present; nevertheless, the system is an incompressible insulator. These results support the possibility that a true Floquet topological insulator could be observed in the steady state of a driven semiconductor.