

“Photon inhibited and enabled Floquet topological conductivity”

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A Floquet topological insulator is a system whose out-of-equilibrium quasi energy spectrum exhibits non-trivial topology. The quasi energy spectrum is an analogue of the stationary states spectrum for the case of time periodic Hamiltonians. Under certain conditions, a topologically trivial spin-orbit coupled insulator, subject to a time periodic perturbation exhibits non-trivial topology. Most notably, the quasi energy spectrum includes edge modes within a bulk gap. A natural question to ask is whether these out of equilibrium edge modes lead to protected and quantized conductivity. Our studies show that the edge conductivity is robust to disorder and deformations but is not quantized. We explain this using a simple physical picture of side bands, inspired by photon assisted tunneling.