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Steady States in Interacting Dissipative Fermionic Floquet Systems KARTHIK SEETHARAM, Caltech, CHARLES BARDYN, Geneva, Caltech, NETANEL LINDNER, Technion - Israel Institute of Technology, MARK RUDNER, University of Copenhagen - Niels Bohr Institute, GIL REFAEL, Caltech — The possibility to drive quantum systems periodically in time offers unique ways to deeply modify their fundamental properties, as exemplified by Floquet topological insulators. It also opens the door to a variety of non-equilibrium effects. Resonant driving fields, in particular, lead to excitations which can expose the system to heating. We previously demonstrated that the analog of thermal states can be achieved and controlled in a fermionic Floquet system in the presence of phonon scattering, spontaneous emission, and an energy filtered fermionic bath. Interactions contribute both to thermalization and heating, and to coherent oscillatory behavior of the long-time state. We analyze the effects of perturbative interactions in the presence of dissipation and the role of coherences in determining the long-time state of the driven system.

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