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Periodically driven system coupled to a fermionic bath: A Keldysh approach DONG E. LIU, Microsoft Research Station Q, ALEX LEVCHENKO, Department of Physics, University of Wisconsin-Madison, ROMAN M. LUTCHYN, Microsoft Research Station Q — We develop a Keldysh approach to study a time-periodically driven system with dissipation. We apply this approach to a periodically driven metallic system coupled to a normal metal and a superconducting bath. After integrating out the fermionic bath degrees of freedom and incorporating its effects exactly through self-energy, we find non-equilibrium Green functions for the driven system which take into account effect of the bath. Our formalism allows one to evaluate non-equilibrium distribution function for particles in the periodically-driven system as well as other observable quantities (e.g. tunneling density of states). In the case of a superconducting bath, we study interplay of the proximity-induced superconducting pairing correlations and the dissipation due to light-excited quasiparticles.

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