

Quantum Theory of Fermion Preheating

Fermion production in the presence of large boson occupation numbers is an important question for various aspects of early-universe cosmology as well as collision experiments of heavy nuclei in the laboratory. Large boson occupation numbers can lead to substantial deviations from perturbative production processes. An important application concerns the question of thermalization following nonequilibrium instabilities in the context of inflaton preheating dynamics, or for plasma instabilities in QCD.