

# Non-thermal fixed points in far-from-equilibrium 3D Bose gases

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Following a quantum quench, local observables in many-body systems typically thermalize. In certain cases, however, this thermalization occurs via a two-stage process: the system first exhibits universal dynamical scaling laws with strongly non-thermal properties, before eventually reaching thermal equilibrium on a longer time scale. This phenomenon is referred to as a non-thermal fixed point.

In this talk, I will discuss the non-thermal fixed point that emerges when a 3D Bose gas is quenched across the condensation transition. I will show that it generally involves a transient "weak turbulence" regime, followed at later times by a coarsening dynamics associated with the slow recombination of vortex lines. Quenches performed exactly at the critical point, in contrast, display a distinct coarsening dynamics, presumably without vortices but involving the diffusion of critical fluctuations. If time permits, I will also discuss the robustness of this universal dynamics against external perturbations, typically disorder and drive.