

Physics Seminar: Luca Delacretaz
Wednesday, October 30 · 2:00 – 3:00pm

Location: 313

Title: Universal thermalization dynamics in (1+1)d QFTs

Abstract: I will describe the mechanism behind the thermalization of (1+1)d QFTs at high and low temperatures. Viewing these theories as CFTs perturbed by relevant or irrelevant deformations, one can show that conformal perturbation theory in the thermal state breaks down at late times, allowing for the emergence of hydrodynamics. This breakdown occurs universally due to the unsuppressed exchange of stress tensors near the lightcone. Furthermore, for theories with large central charge one can solve for the emergent hydrodynamic theory to all orders in the gradient expansion by arguing that all transport parameters appearing in two-point functions have universal expressions in terms of the scaling dimension of the perturbation. The radius of convergence of the hydrodynamic dispersion relations provides an early time cutoff for hydrodynamics, which agrees with the time scale at which conformal perturbation theory breaks down.