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Thermalization and Chaos in 1+1d QFTs

Thursday, 26 May 2022 15:00 (1 hour)

Nonintegrable QFTs are expected to thermalize and exhibit emergence of hydrodynamics and chaos. In weakly coupled QFTs, kinetic theory captures local thermalization; such a versatile tool is absent away from the perturbative regime. I will present analytical and numerical results using nonperturbative methods to study thermalization at strong coupling. I will show how requiring causality in the thermal state leads to strong analytic constraints on the thermodynamics and out of equilibrium properties of any relativistic 1+1d QFT. I will then discuss Lightcone Conformal Truncation (LCT) as a powerful numerical tool to study thermalization of QFTs. Applied to ϕ^4 theory in 1+1d, LCT reveals eigenstate thermalization and onset of random matrix universality at any nonzero coupling. Finally, I will discuss prospects for observing the emergence of hydrodynamics in QFTs using Hamiltonian truncation.

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