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Talk 3: Ayan Mukhopadhyay

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Title: Thermalisation of holographic Schwinger-Keldysh correlation functions

Although time-dependence of one-point functions such as the energy-momentum tensor (eg. evolution towards hydrodynamic behavior) is well studied in holography, much less is known about nonequilibrium time-evolution of n-point holographic correlations. We will present simple methods for studying the time-evolution of unequal-time commutators and anti-commutators of local operators (i.e. study their dependence on their average time coordinate) in holography for arbitrary nonequilibrium states. Thermalisation is defined as evolution towards satisfaction of fluctuation-dissipation relation between the Wigner transformed commutator and the anti-commutator, both of which are measurable separately in solid-state and ultracold atomic systems. We will provide evidence that patterns of holographic thermalisation of two-point Schwinger-Keldysh correlations can be classified using parameters analogous to the Reynolds' number used in case of hydrodynamic flows. In a simple example, we will explicitly show that by changing the quenching rate we obtain three different qualitative evolutions. Finally, we will discuss how we can develop quantum kinetic theory at strong coupling from our results using standard methods and propose new experiments.