



PHYSICS AND ASTRONOMY SEMINAR

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“Momentum Dissipation and Effective Theories of Coherent and Incoherent Transport”

Abstract

I study heat transport in two systems without momentum conservation: a hydrodynamic system, and a holographic system with spatially dependent, massless scalar fields. When momentum dissipates slowly, there is a well-defined, coherent collective excitation in the AC heat conductivity, and a crossover between sound-like and diffusive transport at small and large distance scales. When momentum dissipates quickly, there is no such excitation in the incoherent AC heat conductivity, and diffusion dominates at all distance scales. I extend the coherent/incoherent classification to examples of charge transport in other holographic systems: probe brane theories and neutral theories with non-Maxwell actions.

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