Institut Henri Poincaré

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String Theory in Greater Paris

Rencontres Théoriciennes

"Supergravité, théorie des cordes et théorie M"

Jeudi 23 Mai 2019, 11:40

Richard Davison

DAMTP, Cambridge University

Relations between hydrodynamics and chaos in holographic theories

I will describe some recent work illustrating the relation between hydrodynamic and chaotic properties of quantum field theories with holographic duals. Retarded Green's functions capture the causal response of quantum field theories to small external sources, and I will firstly show how a simple analysis of perturbations near black hole horizons can be used to provide interesting constraints on the forms of these Green's functions in holographic theories. I will use this analysis to prove that the chaotic properties of holographic systems are imprinted in a characteristic way on the retarded Green's function of energy density, and argue that as a consequence these chaotic properties govern the thermal diffusivity of holographic systems at low temperatures.

Institut Henri Poincaré, salle 314, 3ème étage

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