

Institut Henri Poincaré
11 rue Pierre et Marie Curie, 75231 Paris cedex 05
String Theory in Greater Paris

Rencontres Théoriciennes
“Supergravité, théorie des cordes et théorie M”

Jeudi 30 Novembre 2023, 10:00

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A gravitational manifestation of Krylov complexity

Within the framework of the AdS/CFT correspondence, the time dynamics of black holes in the bulk hints to the existence of boundary observables that evolve for very long time-scales. The search for such boundary observables yielded several notions of quantum complexity, though a precise and direct bulk-boundary correspondence was lacking. In this talk we focus on a particular notion of quantum complexity, known as Krylov complexity. We will provide a pedagogical overview, including some interesting results, for this boundary observable, and show how to work with it in the case of double-scaled SYK. Finally, we will show that in the limit where double-scaled SYK is dual to JT gravity, Krylov complexity evolving in time on the boundary has a precise gravitational description in the bulk.

Institut Henri Poincaré, salle 314, 3^{ème} étage

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