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 26 Novembre 2020, 11:00

Francesco Benini

SISSA

Superconformal index and gravitational path-integral

AdS/CFT provides a consistent non-perturbative definition of quantum gravity in asymptotically AdS spacetimes. Black holes should correspond to ensembles of states in the boundary field theory. By performing a careful analysis of the superconformal index of 4d N=4 SU(N) Super-Yang-Mills theory, with the help of a Bethe Ansatz type formula, we are able to exactly reproduce the Bekenstein-Hawking entropy of BPS black holes in AdS5 x S5. The large N limit exhibits many competing contributions, that we are able to identify with complex saddles of the (putative) gravitational path-integral. Along the way we propose a necessary condition for complex saddles to contribute, based on the size of their non-perturbative corrections. Such a prescription exactly matches the field theory analysis.

Institut Henri Poincaré, salle 314, 3ème étage