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String Theory in Greater Paris

Rencontres Théoriciennes

"Supergravité, théorie des cordes et théorie M"

Jeudi 8 Octobre 2020, 11:00

Roberto Emparan

U. Barcelona

Quantum BTZ black hole

I will begin by reviewing the framework of braneworld holography as a means of studying quantum effects on black holes including the gravitational backreaction of strongly-coupled conformal fields. Then I will describe a holographic construction of quantum rotating BTZ black holes (quBTZ) using an exact four-dimensional bulk solution. Besides yielding the quantum-corrected geometry and the renormalized stress tensor of quBTZ, we use it to show that the quantum black hole entropy, which includes the entanglement of the fields outside the horizon, rather non-trivially satisfies the first law of thermodynamics, while the Bekenstein-Hawking-Wald entropy does not.

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