2022 CAP Congress / Congrès de l'ACP 2022



Contribution ID: 3298 Type: Oral Competition (Undergraduate Student) / Compétition orale (Étudiant(e) du 1er cycle)

(U*) Extracting mutual information from a BTZ black hole spacetime

Monday 6 June 2022 17:00 (15 minutes)

Two particle detectors locally interacting with a quantum field can be correlated, even if they are spacelike separated, due to pre-existing field correlations. Such an extraction protocol is called entanglement harvesting. Less well-studied is extraction of more general correlations, as parametrized by mutual information (the total classical and quantum correlations). We investigate the mutual information harvested by two pointlike particle detectors (or qubits) from a massless scalar field in a black hole spacetime. We consider the (2+1)dimensional BTZ black hole, placing the detectors at different separations from and angles around the black hole. We compute the mutual information for these various settings. In conjunction with previous studies of harvested entanglement for this case, we obtain a more complete picture of the structure of scalar field vacuum correlations in the vicinity of a black hole.

Author: Ms BUELEY, Kendra

Co-authors: HUANG, Luosi; GALLOCK YOSHIMURA, Kensuke; MANN, Robert (University of Waterloo)

Presenter: Ms BUELEY, Kendra

Session Classification: M3-4 Strong Gravity and Black Holes (DTP) | Gravité forte et trous noirs

(DPT)

Track Classification: Technical Sessions / Sessions techniques: Theoretical Physics / Physique théorique

(DTP-DPT)