

## BLACK-HOLE MICROSTRUCTURE



ID de Contribution: 7

Type: Non spécifié

### Black hole microstates vs the additivity conjectures

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I will argue that at least one of the following statements must be true: either (a) extensive violations of quantum information theory's "additivity conjectures" exist or (b) there exists a set of "disentangled" black hole microstates that can account for the entire Bekenstein-Hawking entropy (up to at most a subleading  $O(1)$  correction). Possibility (a) would be a significant result in quantum communication theory, demonstrating that entanglement can enhance the ability to transmit information much more than has currently been established. More interestingly given the topic of this conference, option (b) would provide new insight into the microphysics of black holes. In particular, the disentangled microstates would have to have nontrivial structure at or outside the black hole horizon, assuming the validity of the quantum extremal surface prescription for calculating entanglement entropy in AdS/CFT.

<https://youtu.be/fyx4ZHR9N6E>

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