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HOW DOES INFORMATION EMERGE FROM A BLACK HOLE?

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Abstract

A theory of gravity localizes quantum information differently from non gravitational quantum field theories. This effect, called the holography of information, arises as a consequence of the gravitational Gauss law when it is carefully implemented in the quantum theory. A precise version of this property can be established while making only weak assumptions about how gravity behaves at high energies. For simple low-energy states, this property can also be studied in perturbation theory. I will describe how holography of information is manifested in spacetimes where the cosmological constant vanishes, or is nonzero with either sign. I will also discuss implications for evaporating black-holes and show how accounting for this feature of gravity leads to a resolution of several puzzles and explains why information is not lost during black-hole evaporation.



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High Tea: 5PM