

Colloquium - "Black Holes, Quantum Information, and Unification"

Wednesday 6 February 2019 12:00 (1 hour)

The study of black holes has revealed a deep connection between quantum information and spacetime geometry. Precise formulations of this conjectural relation have recently led to new insights in Quantum Field Theory. An important example is the QNEC, a lower bound on the local energy density in terms of the flow of nonlocal information. These results pertain to an unexplored, but accessible regime of the Standard Model: quantum coherent, relativistic, and low energy. They are most easily understood as implications of specific conjectures about quantum gravity, so their experimental tests at low energies would probe our hypotheses about unification at the highest energy scales.

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