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Hot Qubits in Space: Late-time Obstacles to Reliable Predictions with Horizons

Thursday, June 11, 2020 12:00 PM (30 minutes)

Quantum systems in gravitational fields (particularly with horizons) are often plagued by paradoxical predictions at very late times. Examples include predictions for information loss in black holes and for properties of eternal inflation. This talk argues that generic problems exist making such predictions because perturbative methods generically fail at very late times. Similar issues arise in other areas of physics (like optics) and the tools there also work in a gravitational context. The talk describes a simple illustrative application of these tools to a qubit in Rindler space (ie an Unruh observer), and to a qubit in an inflationary (de Sitter) universe. The tools are shown to correct earlier results by Candelas and Sciama and show in detail how, when and why these techniques work.

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