

Superradiance and quantum states on black hole space-times

Wednesday, 30 August 2023 09:30 (1 hour)

We consider the definition of the Boulware and Hartle-Hawking states for quantum fields on black hole space-times. The properties of these states on a Schwarzschild black hole have been understood for many years, but neither of these states has a direct analogue on a Kerr black hole. We show how superradiant modes play an important role in the definition of quantum states on Kerr. Superradiance is also possible on static black hole space-times, in particular for a charged scalar field on a Reissner-Nordstrom black hole. We explore whether analogues of the Boulware and Hartle-Hawking states exist in this situation.

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