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Quantum superradiance of a charged scalar field in Reissner-Nordström spacetime.

Abstract: We analyze the quantum version of charge superradiance for a massless scalar field in Reissner-Nordström spacetime. We compute the expectation values of the operators associated to the fluxes of charge and energy from the black hole in the vacuum state which has no particles as past null infinity. We show that these expectation values are nonvanishing and, therefore, that there is an outgoing flux of superradiant particles at future null infinity.