

Unruh Effect and Entanglement Generation

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The Unruh effect predicts that a uniformly accelerated observer in the Minkowski vacuum perceives a thermal bath, so that an accelerating detector behaves as an open quantum system interacting with an effective thermal environment. We exploited this perspective to study entanglement generation between two identical two-level atoms located at the same spacetime point and weakly coupled to the same external quantum fields, without making assumptions on the spacetime dimension, or on the number and nature of the fields. We derived a Gorini–Kossakowski–Lindblad–Sudarshan (GKLS) master equation for the reduced dynamics of the two detectors and from the corresponding asymptotic state we computed the concurrence in order to measure the entanglement. In particular, we characterised how this depends on the coupling tensor between the detectors and the fields, identifying the regimes in which the Unruh-induced open dynamics can generate or suppress entanglement.

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