

Werner states in non inertial frames

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We investigated the separability of a general Werner state in the framework of non-inertial frames of references. We considered bimodal and trimodal quantum systems described by modes of different field theories. Our analysis include the study of a free scalar quantum field for describing bosons and a free Dirac field associated with the description of Fermions. We provided condition of separability for both bosons and Fermions in bipartite and tripartite systems, showing that the separability of a general Werner state is regulated by the acceleration parameters in both cases. We shown that for bosons and Fermions the acceleration parameter decreases the logarithmic negativity between the modes having two distinct behaviours. Bosons are supposed to undergo the entanglement sudden death phenomena as the acceleration parameter grows, Fermions decrease but remain entangled even in the limit of infinite acceleration. We provided graphical representation of the separability conditions for both Fermionic and bosonic modes and we compute the purity of both cases.

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