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Title: Detailed review of non-Markovian Unruh effect

Abstract:

For the system studied in this report, the time dependent decay rates appearing in the master equation are obtained from the underlying microscopic Hamiltonian model of system (detector) plus environment (quantum field). Using standard approaches to derive the master equation, we show that such coefficients are directly linked to the trajectory of the detector in Minkowski space. Interestingly, we have identified the relevant physical parameter ruling the transition from Markovian to non-Markovian dynamics, showing that memory effects may occur. This provides new physical insight in the understanding of the Unruh effect and paves the way to the exploration of relativistic quantum phenomena in the modern framework of open quantum systems, that is in terms of quantum information exchange between system and environment.