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The numerical investigation of the stochastic Schroedinger equation with memory

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Abstract content (Max 300 words)
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Currently, there is growing interest in the study of non-Markovian quantum dynamics. This is a topic of importance for the field of open quantum systems. One of the useful tools for the description of such kind of systems is the stochastic wave function method, which allows to describe the dynamics by averaging over trajectories.

We consider the heterodyne detection of a two-level system, that was obtained with the help of the random Hamiltonian method, when the coefficients of the linear equation are not random and the Hamiltonian produces dissipation. Two extra terms are added in order to introduce the heterodyne detection and the losses in the system. The transition between the linear and non-linear versions of the stochastic Schroedinger equation is connected by the change of probability and the Girsanov transformation. Moreover, the non-linear stochastic Schroedinger equation is the starting point for the stochastic simulations allowing to find a solution of the corresponding master equation numerically.

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No

Level for award (Hons, MSc, PhD, N/A)?

PhD

Main supervisor (name and email) and his / her institution

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