# Quantum trajectories for systems driven by fields in non-classical states

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ABSTRACT

We present an example of quantum trajectories for a system driven by non-classical states of light. Using Gardiner and Collet's input-output theory [1] and the concept of cascade systems [1] we derive stochastic master equation for amplitude quadrature measurements. The system and electromagnetic field are described by making use of quantum stochastic unitary evolution [2]. The output field carries information about the system and it can be used to monitor the state of the system. As the non-classical state of light we consider a superposition of vacuum and single photon states [3] and a mixture of two continuous-mode coherent states. In those cases the master equations are given by a finite set of coupled equations which reflects the non-Markovian character of the problem [4]. To find the stochastic evolution of the system we use the conditional characteristic function method [5, 6] and we extend the compound system by an ancilla which is driven by the vacuum (quantum white noise) and it generates the non-classical state of light.

# References

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