

## Entropy Squeezing in Coupled Field-Superconducting Charge Qubit with Intrinsic Decoherence

YAN Xue-Qun, SHAO Bin, and ZOU Jian

Department of Physic, School of Science, Beijing Institute of Technology, Beijing 100081, China  
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**Abstract:** We investigate the entropy squeezing in the system of a superconducting charge qubit coupled to a single mode field. We find an exact solution of the Milburn equation for the system and discuss the influence of intrinsic decoherence on entropy squeezing. As a comparison, we also consider the variance squeezing. Our results show that in the absence of the intrinsic decoherence both entropy and variance squeezings have the same periodic properties of time, and occur at the same range of time. However, when the intrinsic decoherence is considered, we find that as the time going on the entropy squeezing disappears fast than the variance squeezing, there exists a range of time where entropy squeezing can occur but variance squeezing cannot.

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Key words: entropy squeezing, intrinsic decoherence, superconducting charge qubit

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