

# Fluctuations and stochastic processes in one-dimensional many-body quantum systems

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## Reference:

H.-P. Stimming, N. J. Mauser, J. Schmiedmayer, I. E. Mazets

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<http://prl.aps.org/abstract/PRL/v105/i1/e015301> [2]

We study the fluctuation properties of a one-dimensional many-body quantum system composed of interacting bosons and investigate the regimes where quantum noise or, respectively, thermal excitations are dominant. For the latter, we develop a semiclassical description of the fluctuation properties based on the Ornstein-Uhlenbeck stochastic process. As an illustration, we analyze the phase correlation functions and the full statistical distributions of the interference between two one-dimensional systems, either independent or tunnel-coupled, and compare with the Luttinger-liquid theory.

- [AQUTE](#) [3]
- [04.25.+1 Entanglement in solid state systems, Luttinger liquids, etc.](#) [4]
- [Quantum Information Theory](#) [5]
- [04. ENTANGLEMENT IN MANY-BODY SYSTEMS](#) [6]

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