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HUMBERTO LAGUNA: The Wigner function of Open Quantum Systems and position-momentum correlation

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The interest in Open Quantum Systems (OQS) has increased as OQS has been applied for the study of diverse physical phenomena. In this work we study the Wigner functions of the Harmonic Oscillator (HO) and two coupled Harmonic Oscillators (the Moshinsky atom). Both models were coupled with a bath under two different coupling bath-system regimes: a) pure-dephasing without relaxation and b) relaxation without pure-dephasing. The time evolution of the phase-space functions was analyzed with the aid of information-theoretic tools (Shannon entropy and mutual information). The time evolution of the localization in phase space and of the position-momentum correlation is analyzed.

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