

## Quantization of Damped Systems Based on the Doubling of Degrees of Freedom

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**Abstract :** In this paper, it provide the canonical approach for studying dissipated oscillators based on the doubling of degrees of freedom. Clearly, expressions for Lagrangians of the elementary modes of the system are given, which ends with the familiar classical equations of motion for the dissipative oscillator. The equation for one variable is the time reversed of the motion of the second variable. it discuss in detail the extended Bateman Lagrangian specifically for a dual extended damped oscillator time-dependent. A Hamilton-Jacobi analysis showing the equivalence with the Lagrangian approach is also obtained. For that purpose, the techniques of separation of variables were applied, and the quantization process was achieved.

**Keywords :** doubling of degrees of freedom, dissipated harmonic oscillator, Hamilton-Jacobi, time-dependent lagrangians, quantization

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