

12. LET. AL N. CIMENTO, VOL. 34, N. 18, (1982), Pages 571 - 574

Some Remarks on the Caldirola - Montaldi Equation

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Abstract

In a recent paper Caldirola and Montaldi used some difference equations to describe a quantum - dissipative system. One of these equations is the following

$$\frac{i\hbar}{\tau} [\psi(t + \tau) - \psi(t - \tau)] = \hat{\mathcal{H}}(\hat{p}, \hat{q}, t)\psi(q, t)$$

In this note we describe some interesting approximation methods, related to these equations. We find some new Hamilton operators that are non in general self - adjoint.