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On the Equation of Motion

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Abstract

We find the equation of motion of a physical system in non - canonical quantum mechanics, where the commutator of the coordinate and momenta operators is a self adjoint linear operator \hat{c} .

$$\frac{d\hat{q}}{dt} = i[\mathcal{H}, \hat{q}] = \hat{p}, \quad \frac{d\hat{p}}{dt} = i[\mathcal{H}, \hat{p}] = -f(\hat{q}), \quad i[\hat{p}, \hat{q}] = \hat{c}$$

$f(\hat{q})$ is a polynomial function.