

Erratum: Fast optimal transition between two equilibrium states [Phys. Rev. A **82, 033430 (2010)]**

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(Received 11 May 2011; published 31 May 2011)

DOI: [10.1103/PhysRevA.83.059911](https://doi.org/10.1103/PhysRevA.83.059911)

PACS number(s): 37.10.-x, 67.85.-d, 99.10.Cd

We noticed an error in the invariant of motion given in Eq. (2). The correct invariant reads

$$I(t) = \frac{\Pi^2}{2m} + \frac{1}{2}m\omega_{0z}^2 Q^2. \quad (2)$$

It is invariant if Eqs. (3) and (4) of the paper are satisfied. Given the boundary conditions considered, $I(t)$ commutes with $H(t)$ for $t \leq 0$ and $t \geq t_f$, and thus nothing is changed concerning the rest of the paper. In particular, the validity of the method and of the experimental results is not affected by this error.