

Liouville Theorem and Jarzynski Equality

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Liouville Theorem

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一般情形

哈密顿量 $H = H(\mathbf{q}, \mathbf{p}) = H(\mathbf{x})$, $\mathbf{x} = (\mathbf{q}, \mathbf{p})$

$$\begin{cases} \dot{q}_i = \frac{\partial H}{\partial p_i} \\ \dot{p}_i = -\frac{\partial H}{\partial q_i} \end{cases} \Rightarrow \dot{x}_\alpha = \omega_{\alpha\beta} \frac{\partial H}{\partial x_\beta} \quad (1.1)$$

其中, $i = 1, 2, \dots, n$, $\alpha = 1, 2, \dots, 2n$,

$$[\omega_{\alpha\beta}] = \begin{pmatrix} & I \\ -I & \end{pmatrix} \Rightarrow \omega_{\alpha\beta} = -\omega_{\beta\alpha} \quad (1.2)$$