Errata in "Stochastic Thermodynamics: An Introduction"

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With many thanks to D. Lacoste.

Chapter 2. Basics

2.10 Information

- `Page 34, line 3 from bottom, eq. (2.141). Read:`

$$+ D_{\mathrm{KL}}(p(\mathcal{S}_1|\mathcal{S}_2)\|q(\mathcal{S}_2\|\mathcal{S}_1)),$$

  `correct to:`

$$+ D_{\mathrm{KL}}(p(\mathcal{S}_1|\mathcal{S}_2)\|q(\mathcal{S}_2|\mathcal{S}_1)),$$

- `Page 34, line last, eq. (2.142). Read:`

$$D_{\mathrm{KL}}(p(\mathcal{S}_1|\mathcal{S}_2)\|q(\mathcal{S}_2\|\mathcal{S}_1)) =$$

  `correct to:`

$$D_{\mathrm{KL}}(p(\mathcal{S}_1|\mathcal{S}_2)\|q(\mathcal{S}_2|\mathcal{S}_1)) =$$

Chapter 3. Stochastic thermodynamics

3.7 Stochastic entropy and entropy production in a manipulated two-level system

- `Page 49, caption to fig. 3.3, line 6. Read:`
  probability of occupation $p_1(1)$
  `correct to:`
  probability of occupation $p_1(t)$

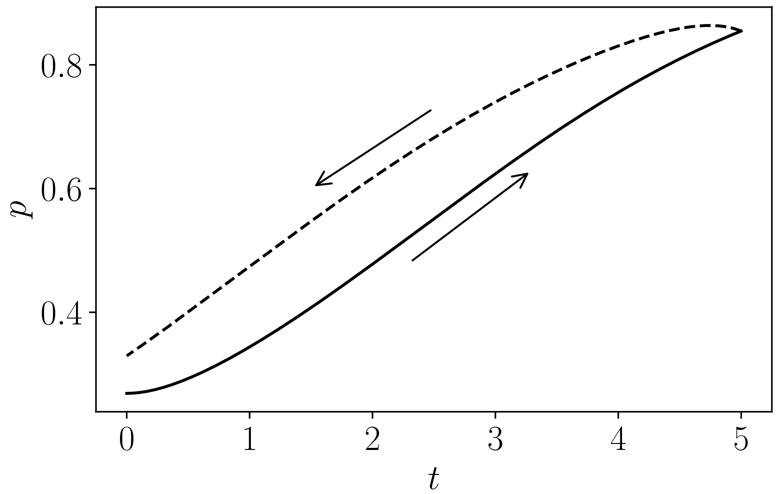
3.15 Exercises

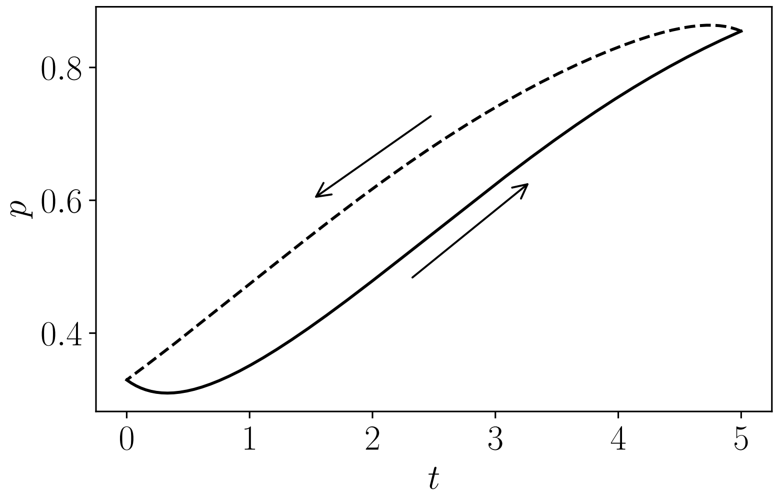
- `Page 65, line 5 from bottom. Read:`
  ϵ and different values of the
  `correct to:`
  ϵ_{f} and different values of the

Chapter 4. Fluctuation relations

4.5 Detailed fluctuation relation

- Page 78. Fig. 4.4 should be replaced by the following:





4.9 Adiabatic and nonadiabatic entropy production and the Hatano-Sasa relation

- P. 83, line 7, eq. (4.69). Read:

$$= -k_{\mathrm{B}} \sum_{k=0}^{n} \ln \frac{p^{\mathrm{st}}_{x_j}(t_{k+1})}{p^{\mathrm{st}}_{x_k}(t_j)} =$$

correct to:

$$= -k_{\mathrm{B}} \sum_{k=0}^{n} \ln \frac{p^{\mathrm{st}}_{x_k}(t_{k+1})}{p^{\mathrm{st}}_{x_k}(t_k)} =$$

Chapter 5. Thermodynamics of Information

5.3 Information in stochastic thermodynamics

- Page 108, line 3 from bottom, eq. (5.8). Read:

$$\ln \frac{p_{x,y}(t_\mathrm{m})}{p_x(t_\mathrm{m})}$$

correct to:

$$\ln \frac{p_{x|y}(t_\mathrm{m})}{p_x(t_\mathrm{m})}$$

5.6 Copying information

- Page 114, line 20. Read:
$\delta^\mathrm{stall} = \epsilon_R + k_\mathrm{B}T\,\ln(1-\eta_\mathrm{eq})$.
correct to:
$\delta^\mathrm{stall} = \epsilon_\mathrm{r} + k_\mathrm{B}T\,\ln(1-\eta^\mathrm{eq})$.

- Page 114, line 23. Read:
$\delta \gg 1$,
correct to:
$\delta \gg k_\mathrm{B}T$,

Chapter 6. Large Deviations: Theory and Practice

6.7 Fluctuation relations in a model of kinesin

- Page 148, 12th line from bottom, eq. (6.84). Read:

$$A_1 = k_\mathrm{B}T \ln \frac{k_0^{\nearrow} k_1^{\rightarrow}}{k_0^{\leftarrow} k_1^{\swarrow}} = -2fd + \Delta\mu;$$
$$A_2 = k_\mathrm{B}T \ln \frac{k_0^{\rightarrow} k_1^{\rightarrow}}{k_0^{\leftarrow} k_1^{\leftarrow}} = -2fd.$$

correct to:

$$A_1 = k_\mathrm{B}T \ln \frac{k_0^{\nearrow} k_1^{\rightarrow}}{k_0^{\leftarrow} k_1^{\swarrow}} = 2fd + \Delta\mu;$$
$$A_2 = k_\mathrm{B}T \ln \frac{k_0^{\rightarrow} k_1^{\rightarrow}}{k_0^{\leftarrow} k_1^{\leftarrow}} = 2fd.$$

- Page 149. Caption to fig. 6.4, third line. Read:
where $J^{(r)} > 0$ and $J^{(n)} < 0$,
correct to:
where $J^{(r)} > 0$ and $J^{(n)} > 0$,

- Page 149. 5th line of the text. Read:
  $J^{(r)} < 0$ and $J^{(n)} > 0$.
  correct to:
  $J^{(r)} < 0$ and $J^{(n)} < 0$.

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- Page 149. 7th line from bottom. Read:
  $\Delta\mu\, J^{(n)} < 0$,
  correct to:
  $\Delta\mu\, J^{(n)} > 0$,

- Page 149, 4th line from bottom, eq. (6.86). Read:

$$T\dot{S} = A_0 J_0 + A_1 J_1 + A_2 J_2 = -2fd\, J^{(r)} + \Delta\mu\, J^{(n)}.$$

  correct to:

$$T\dot{S} = A_0 J_0 + A_1 J_1 + A_2 J_2 = 2fd\, J^{(r)} + \Delta\mu\, J^{(n)}.$$

Chapter 8. Developments

8.9 Population genetics

- Page 199. Add to last line:
  For instance, in a Moran model with constant population size one has $\Lambda = 0$ and

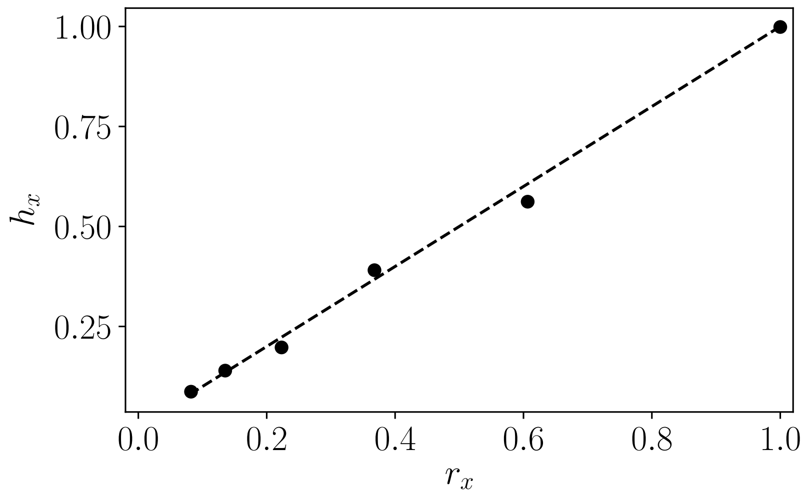
$$r_x = h_x - \frac{1}{\mathcal{T}} \ln\left(1 - p^{\mathrm{chr}}(\mathrm{ext}, \mathcal{T})\right),$$

  where $p^{\mathrm{chr}}(\mathrm{ext}, t)$ is the chronological probability that a lineage becomes extinct before time t. This is given by

$$1 - p^{\mathrm{chr}}(\mathrm{ext}, \mathcal{T}) = \left\langle 2^{-\rho}\right\rangle^{\mathrm{ret}},$$

  where the average is taken over all lineages surviving to time $\mathcal{T}$. An example is shown in fig. 8.6.

- Page 200. Fig. 8.6 should be replaced by the following:



- Page 200. Caption to fig. 8.6. Read:
  The dotted line is a fit to $h = r + \text{const}$. The average number of divisions per lineage in this run is 5.64.
  correct to:
  The dotted line corresponds to $h = r$. The average number of divisions per lineage in this run is 9.01.

Appendixes

A.1 Convex Functions and the Jensen Inequality

- Page 210, line 14, eq. (A.20). Read:

$$\frac{\mathrm{d}}{\mathrm{d}t} D_{\mathrm{KL}}(p(t) \| p^{\mathrm{st}}) \leq 0.$$

correct to:

$$\frac{\mathrm{d}}{\mathrm{d}t} D_{\mathrm{KL}}(p^{\mathrm{st}} \| p(t)) \leq 0.$$