Understanding Markov Chains - Examples and Applications

Errata to the Second (2018) Edition

- Page 4 line -2: It should be "disjoint" instead of "disjoints".
- Page 11 line 11: It should be $\frac{\partial F_X}{\partial x}(x)$ instead of $F_X(s)$.
- Page 18 line 7: It should be $0 + \mathbb{P}(A) = \mathbb{P}(A)$ on the right-hand side.
- Page 20 line 1: It should be $\mu/(\mu - \lambda)$ in the right-hand side.
- Page 20 line -7: Remove the division by $\mathbb{P}(A)$ on the right hand side.
- Page 28 line 18: It should be "$\mathcal{G}$-measurable", not "$\mathcal{H}$-measurable".
- Page 29 line 2: It should be "$\mathcal{H}$-measurable", not "$\mathcal{G}$-measurable".
- Page 41 line 7: Change "in the case" to "in the cases".
- Page 41 line -10: The value of $f_3(1)$.
- Page 41 line -9: "step" should be "steps".
- Page 43 line 2: $f(k)$ should be $f_S(k)$ in (2.2.6).
- Page 43 line 10: "rely" should be "relies".
- Page 43 line -2: $1 \leq k \leq S - 1$ can be replaced with $1 < k \leq S - 1$.
- Page 46 lines 3 and -1: $f(k)$ should be $f_S(k)$.
- Page 51 line 15: $q \lim_{n\to\infty}(pq)^n = 0$.
- Page 51 line -6: (2.2.7) should be (2.2.27).
- Page 56 lines -13 to -8: $h(\cdot)$ should be $h_S(\cdot)$.
- Page 58 line -5: Delete "below".
- Page 73, Figure 3.2: The blue segment from 12 to 13 can be removed.
- Page 74, Figure 3.3: Change "$T_0^r = n$" to "$n = 14$".
- Page 77 line 5: "and $h(0) = 1$".
- Page 77: The labels (3.4.10)-(3.4.12) should be moved two lines up.
- Page 79: The footnote 6 may be removed.
- Page 81: (13.9) should be (A.8).
- Page 82 line 16, Eq. (3.4.24): $\mathbb{P}(S_n = k \mid S_0 = 0)$ can be deleted.
- Page 92 line -7, Eq. (4.2.2): Change $i \in \mathbf{N}$ to $i \in \mathbb{S}$.
- Page 99 line 8: "matrix" should be "matrices".
- Page 105 line -1: $Z_n = 1$ should be $Z_n = i$.
- Page 116 line -3: g should be g_l.

- Page 117 line 12: Change "is said to be absorbing" into "is absorbing".
- Page 121 line -10: "whenever $X_0 = k \in A$" should be "whenever $Z_0 = k \in A$".
- Page 122 line 9: "Lemma 2.3" should be "Lemma 2.4".
- Page 123 lines -4 and -2: The exponent should be "$k-1$", not k".
- Page 124 line -8: "with the boundary condition $h_A(k) = f(k)$".
- Page 124 lines 6, 7, 8 except for the second sum on line 8: It should be $\sum_{m=0}^{N}$ instead of $\sum_{m=0}^{r}$.
- Page 125 line 2: "with $h_{\{m\}}(m) = 0$".
- Page 125 line 5: State $\textcircled{1}$ should be $\textcircled{l}$.
- Page 127 line -4: "which is in agreement with".
- Page 133 lines 10-11: This duplicate sentence should be removed.
- Page 135 line -6: $p_{j,j}$ and $p_{i,j}$ can be replaced with p_{jj} and p_{ij}.
- Page 137 line 8: The transition matrix should read

$$P = \begin{array}{c} \\ 0 \\ 1 \\ 2 \end{array} \begin{array}{c} \begin{array}{ccc} 0 & 1 & 2 \end{array} \\ \begin{bmatrix} 1 & 0 & 0 \\ 1/3 & 0 & 2/3 \\ 0 & 1 & 0 \end{bmatrix} \end{array}.$$

- Page 147, Remark 6.1, line 1: $\mathbb{1}\{i = j\}$ should read $\mathbb{1}_{\{i=j\}}$.
- Page 148 lines 13 and 14: Remove "$+\infty$" as upper index in the sum.
- Page 149 line 9: $P_{k,i} = 0$, $k \in \mathbb{S}$.
- Page 179 line 3: Change the index j to k on the right, i.e. $\frac{\pi_j P_{j,i}}{\pi_i P_{i,j}}$ becomes $\frac{\pi_k P_{k,i}}{\pi_i P_{i,k}}$.
- Page 192 line -5: Change "independent random variables" into "independent identically distributed random variables".
- Page 193 line 1: Change $X_n^{(k)}$ to $X_n^{(l)}$ in the summation over l.
- Page 195 line -8: Change "$\sigma^2\mu^n + \mu^2\sigma_n^2$" to "$\sigma^2\mu^n + \mu\sigma_n^2$".
- Page 196 line -10: It should be $\mathbb{P}(X_n = 0 \mid X_0 = 1) - \mathbb{P}(X_{n-1} = 0 \mid X_0 = 1)$.
- Page 198 line -11: Remove "(5.1.5) and".
- Page 202 line 5: Replace the dot by a comma after "(sub)critical case".
- Page 202 line -3: Change "parameter 1/2" into "parameter p".
- Page 213 line -8: "(14.4) and (14.5)" should be "(B.4) and (B.5)".
- Page 215 line 15: Change "strictly larger that" into "strictly larger than".
- Page 220 line 5: Replace "-1" with "$-1/h$" on the right.
- Page 220 line 6: Divide both terms by h.

- Page 220 line -2: Remove "only" and change "can have" to "has".
- Page 221 line -9: "with", not "which".
- Page 224 line 4: Remove "$+\infty$" as upper index in the sum.
- Page 228, insert "The equation" before (9.4.3).
- Page 243 line -2: It should be "$\mathrm{e}^{t\lambda_n}$" (with no minus sign).
- Page 248 line 2: "and $\mu_1 > 0$".
- Page 252 line -1: "When $\lambda = \mu$, Relation (2.2.12) shows that".
- Page 264 line 8: "generated by $(X_n)_{n\geq 1}$" (not by $(S_n)_{n\in\mathbb{N}}$).
- Page 264 line 15: Delete "e.g.".
- Page 268 line -1: Change "$\mathcal{F}_{l-1} \subset \mathcal{F}_l \subset \mathcal{F}_k$, $1 \leq l \leq k$" into "$\mathcal{F}_{l-1} \supset \mathcal{F}_k$, $l \geq k+1$".
- Page 270 line 2: Delete "for $k \in \{1, 2, \ldots, B-1\}$".
- Page 281 line 1: "Spatial Poisson processes".
- Page 282 line 1: Change "A a (measurable) subset" into "a (measurable) subset A ".
- Page 292 line -2: Change "$\lim_{t\searrow 0} tR(t) = 0$" into "$\lim_{t\searrow \infty} tR(t) = 0$".
- Page 293 Exercise 12.1: Change "$x^{\beta-1}\mathrm{e}^{-t^\beta}$" into "$x^{\beta-1}\mathrm{e}^{-x^\beta}$".
- Page 312 line 9: $g_k := \mathbb{P}(X_{T_A} = 13 \mid X_0 = k)$.
- Page 354 Exercise 9.17 part (b): Remove $\alpha\,\mathbb{E}[T_1^r|X_0 = 1]$ on lines -7 and -6, and delete line -4.
- Page 363 Reference [Lal]: Change "`/lalley/`" to "`/~lalley/`".
- Pages 164, 165, 169, 195, 292, the reference to Karlin & Taylor (1981) should be instead to Karlin & Taylor "An Introduction to Stochastic Modeling" (1998).