

Errata to: Random Walks in the Quarter-Plane

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Errata to:

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*Correcting a book is a heavy-tailed process, which has
some non Markovian features...*

P. 8, line 3 of Definition 2.1.1. Read “ \mathcal{A}_X ” instead of “ A_X ”.

P. 9, line 3 of Definition 2.1.4. Replace “holomorphic mapping” by “continuous mapping (see [34])”.

P. 10, line 3. Delete the extra space after “representing”. At the end of formula (2.1.2), replace the dot by a comma.

P. 12. At the end of Proposition 2.1.12, replace the “.” (dot) by “ X' and Y' being as in definition 2.1.2.”

P. 15, two lines after equation (2.2.1). Change “(1.3.6” to “(1.3.6)”.

P. 21. In (i) of Lemma 2.3.4: line 1, should be “ $|Y_1(x)| \geq 1, \forall |x| = 1$,” instead of “ $|Y_1(x)| \geq 1, \forall |x| = 1$ ”; line 3, replaces “is a real analytic curve” by “describes a real analytic curve”.

P. 22, line 5. Change “(i)” to “(ii)”.

- In the formula line -5, replace “ $-p_{10}$ ” by “ $-p_{01}$ ”.

P. 24, line following (iii). Read “been” [instead of “seen”].

P. 29, line 6. Change “2.2.3” to “2.2.4”.

P. 37, line -8. Replace “automorphism” by “holomorphic mapping”.

P. 45. Lemma 3.3.2 is valid only if $d_4 = p_{10}^2 - 4p_{11}p_{1,-1} \geq 0$. Otherwise change $D(x)$ to $-D(x)$ in the displayed formulas (3.3.6).

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• Line -8. Replace “the zeros of y ” by “the zeros of $g(\cdot)$ ”; line -7, missing colon after “relationship”.

P. 46. In the LHS of formula (3.3.8), replace “ ω ” by “ w ”. Similarly, in the line following this formula, change “where ω ” to “where w ”.

P. 47. The formula defining ω_1 holds only if $p_{10}^2 - 4p_{11}p_{1,-1} \geq 0$. Otherwise, $D(x)$ becomes $-D(x)$.

P. 51, line -1. Replace “ $P_0(x, y), P_0(x, y)$ ” by “ $P_0(x, y), P_1(x, y)$ ”.

P. 52, line 3. Change “When π ” to “When ρ ”.

P. 57. In the displayed system (4.2.6). Insert “,” (i.e., comma) at the end of the first line; in the third line, read the second “ ψ ” as “ $\tilde{\psi}$ ”.

P. 62, line -9. Replace “with $h = \alpha$ ” by “with $h = \beta$ ”.

• Line 13. Read “that” instead of “that that”.

P. 66. Line 7. Change “instantiating $\gamma = 1$ in lemma 4.2.4” to “instantiating $\varepsilon = 1$ in lemma 4.2.8”; line 12, “ $\mathbb{C}\omega$ ” becomes “ $\mathbb{C}\omega$ ”; line -10, “using some by” should be “using some of”.

P. 72. In the displayed formula (4.3.8). Change “ $\prod_{j=0}^{i=1} f_{\delta^i}$ ” to “ $\prod_{j=0}^{i-1} f_{\delta^j}$ ”.

P. 79, line 14. “presentedbelow” becomes “presented below”.

P. 89. In the equation line -4. Replace “ $\eta(\infty, 0)$ ” by “ $(\eta(\infty), 0)$ ”.

P. 94. Second line of the displayed system (5.1.2), “ x^{i-1} ” should be “ x^{i-L} ”.

P. 100, line -6. Insert a comma right after “[61]”.

P. 110, last equation. Change “ $X_1[\overleftarrow{y_3 y_4}]$ ” to “ $\overline{X}_1[\overleftarrow{y_3 y_4}]$ ”.

P. 111. In the determinant, replace the central term “ $p_{0,-1}$ ” by “ $p_{00} - 1$ ”.

P. 112. In the last formulas involving α_2 and β_2 : replace “ $P_{0,0}$ ” and “ $P_{-1,0}$ ” respectively by “ $p_{0,0}$ ” and “ $p_{-1,0}$ ”. (I.e., P becomes p).

P. 113. In the formula defining T , the second term should be replaced by $+2u(p_{-1,1}p_{0,-1} - p_{-1,-1}p_{01}) + p_{-1,0}p_{0,-1} + (1 - p_{00})p_{-1,-1}$.

P. 114. Replace $Y(x_4) = \frac{-b(x_4)}{a(x_4)}$ and $\Re(Y(\infty)) = \frac{-b(\infty)}{2a(\infty)}$ by, respectively,

$$Y(x_4) = \frac{-b(x_4)}{2a(x_4)} \text{ and } \Re(Y(\infty)) = \frac{-b(\infty)}{2a(\infty)}.$$

P. 116. In line 4 of paragraph (a), “ad” becomes “and”.

P. 117, line 2. Change “section 4.7” to “section 4.6”.

P. 119. In the line 1 of *Proof*, replace “theorem 5.2.3” by “theorem 5.3.3”.

P. 122. Two lines after equation (5.4.12), put “ $(X_0(u_k), u_k) \in \mathcal{D}$ ” instead of “ $u_k \in \mathcal{D}$ ”.

- The RHS of formula (5.4.12) should be

$$\psi_1(x) = \sum_k a_k \frac{\pi(x) - \pi(X_0(u_k))}{x - X_0(u_k)},$$

- Last line. Read “since by (5.1.6)” instead of “since”.

P. 123. There are several jams in the definitions of the functions. . . !

- Formula (5.4.16) should be

$$\begin{aligned} \psi(x) &= \psi_1(x) + \sum_\ell b_\ell \frac{\pi(x) - \pi(X_0 \circ Y_0(v_\ell))}{x - X_0 \circ Y_0(v_\ell)} \\ &= \sum_k a_k \frac{\pi(x) - \pi(X_0(u_k))}{x - X_0(u_k)} + \sum_l b_l \frac{\pi(x) - \pi(X_0 \circ Y_0(v_\ell))}{x - X_0 \circ Y_0(v_\ell)}, \end{aligned}$$

- In system (5.4.18), replace the expression giving $T(x)$ by

$$\frac{R(x)}{P(x)} \left[\sum_\ell \frac{b_l g(v_\ell)}{(x - X_0 \circ Y_0(v_\ell)) A(X_0 \circ Y_0(v_\ell))} - \sum_k \frac{a_k \pi_0(X_0(u_k), u_k)}{(x - X_0(u_k)) q(X_0(u_k), u_k)} \right],$$

- Right after displayed system (5.4.18), add the following lines:

“and $P(x)$ is a polynomial depending linearly of the coefficients a_k and b_l , which are chosen real, to ensure that $P(x)$ does not vanish in the domain $G_{\mathcal{M}} \cup \mathcal{D}$. This can clearly be achieved in many ways.”

- In system (5.4.20), change the first line of definitions to

$$\rho(t) = S(t)\psi(t), \quad K(t) = \frac{G(t)R(t)}{P(t)},$$

P. 124. The factor before the integral in formula (5.4.21) becomes

$$\frac{R(x)H(x)}{2i\pi P(x)S(x)}$$

P. 127. In the formulas giving e_1 and e_2 , “ ω_2 ” becomes “ ω_1 ”.

- Line -12. Replace “ $\frac{dx}{d\omega}$ ” by “ $\frac{dw}{dx}$ ”.
- In the last formula of section 5.5.2.2, change “ $(-e_3)$ ” to “ $(w - e_3)$ ”.

P. 130. In the figure representing the real axis, switch the points 1 and x_3 .

- Line -14. Change “ $i = 1, 2$ ” to “ $i = 0, 1$ ”.

P. 135. In section 6.4.2. Replace (twice) “ $X_0 \circ Y_0)^{(n)}$ ” by “ $(X_0 \circ Y_0)^{(n)}$ ”.

- In the formula (6.4.4), change “ $y(u)$ ” to “ $y(s)$ ”, and “ $\eta(s)$ ” to “ $\gamma(s)$ ” (twice) and add a comma at the end of the formula.

P. 136, line 2. Read “is given” instead of “in given”.

- Line -1. Change “(6.4.2)” to “(6.4.4)”.

P. 136. In the third fomula from above, replace the “.” (dot) by “,” (comma), and right after this formula add the following text:

“and $\gamma(\cdot)$ is a fractional linear transform satisfying $\gamma(\eta(s)) = \frac{1}{\gamma(s)}$.”

P. 142, line -7. Read “figure 6.5.1” instead of “figure 6.5.2”.

P. 143. In formula (6.5.11), change “ $y(u)$ ” to “ $y(z)$ ”, and “ $\eta(z)$ ” to “ $\varepsilon(z)$ ”.

- Line -3. Replace “ $w \rightarrow w + \frac{1}{w}$ ” by “ $w \rightarrow \frac{1}{2} \left(w + \frac{1}{w} \right)$ ”.

P. 150, line 7. Replace “5.4 6.5” by “5.4 and 6.5”.

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