Errata for the book
Partial Differential Equation in Action
(First edition 2007) by
Sandro Salsa

N.B.: Negative lines start above the footnotes.

Chapter 1
Page 8, line 1: = A should be = \mathbb{R}.
Page 9, line -4: change A into \Omega.
Page 11, line -2: change “be a C^1-” into “be a bounded C^1-”
Page 12, line 5: |\nabla \varphi (y')| should be |\nabla \varphi (y')|^2
Page 12, line 10: Change \int_\Omega into \int_{\partial \Omega}.

Chapter 2
Page 24, line 17: “least square” should be “least squares”.
Page 26, line -5: change - \sum_{m=1}^{\infty} into -(u_1 - u_0) \sum_{m=1}^{\infty}.
Page 34, line 10: change x_1 \in V into x_1 \in \Omega and \nabla into \partial \nabla.
Page 36, line 7: ca^n should be ca^n q.
Page 36, line 9 and 12: delete q.
Page 46, line -3: the first \langle k^2 \rangle should be \langle k \rangle.
Page 56, line 7: \Gamma should be \Gamma_D.
Page 70, line 7: change (0, \infty) into (0, T).
Page 87, line 1: change 2.8.3 into 2.2.2.
Page 98, line -3: barriers should be barriers.
Page 101, line 8: change “large enough” into “suitably chosen”.

Chapter 3
Page 103, line 10: e^{i\alpha z} should be e^{i\alpha z}.
Page 106, line 2: change M_h f to M_h u.
Page 108, line 4: change \Delta^* w_t into \Delta^*_0 w_t.
Page 111, line 4: erase “from”.
Page 114, line 7: change -\lambda v(r) into \lambda v(r).
Page 114, line 15: change \lambda = m into \lambda = -m^2.
Page 116, line 1 of the footnote 8: change \tilde{R}(\cos \varphi, \sin \varphi) into \tilde{R}(p_1 + \cos \varphi, \rho_2 + \sin \varphi).
Page 124, line 3: u_R should be u.
Page 125, line -1: \omega^{-1}_n should be [(n-2) \omega_n]^{-1}.
Page 140, line -10: change m \geq 2 into m \geq 4.
Page 140, line -7: \partial B_{m\sigma} should be \partial B_{(m-1)\sigma}.
Page 142, footnote, line -2: u_h (x) should be u_h (x, \sigma).
Page 147, lines -4, -5: B_R should be \Omega.
Page 148, line −7: 3.16 should be 3.19.
Page 151, line 11: replace “unit circle” by “circle of radius $R$”.
Page 151, line −7: replace “harmonic $B_1^+$” by “harmonic in $B_1^+$”.
Page 154, line 3: replace “harmonic $\Omega_e$” by “harmonic in $\Omega_e$”.

Chapter 4

Page 175, lines 8, 11, 14, 19: replace $q''$ by $q'' \circ g$.
Page 176, line 7: replace $q''$ by $q'' \circ g$.
Page 181, Fig. 4.18, caption: change 4.3 into 4.2.
Page 183, Footnote 13: replace “we already have $u_x < 0$” by “we have $u_x \geq \frac{1}{Ct}$”.
Page 185, line −7: change the first $u_-$ into $u_+$.
Page 186, line 7: replace $R$ by $r$.
Page 189, line −9: change $\rightarrow 0$ into $\rightarrow 0^+$.
Page 191, line −5: erase one of the two (4.67).
Page 192, line 4: replace “$= \int_0^L$ ” by “$= \frac{2}{\sqrt{\pi}} \int_0^L$”.
Page 212, lines 3, 4: add reference number (4.120bis) to the system.
Page 212, line 17: change “system (5.30)” into “system (4.120bis)”
Page 217, line 6: change $q'$ into $q' \circ g$ and $q''$ into $q'' \circ g$.
Page 218, line 8: change $u(0,x) = \mathcal{H}(x)$ into $u(x,0) = -\mathcal{H}(x)$.
Page 218, line 14: replace “$= \int_s^{+\infty}$ ” by “$= \frac{2}{\sqrt{\pi}} \int_s^{+\infty}$”.

Chapter 5

Page 232, lines −6 and −7: replace $1/2L$ by $c/2L$ and $m/2L$ by $mc/2Lm$, respectively.
Page 248, line 2: change $-k$ into $-2k$.
Page 248, lines 22 and 26: change $\tau$ into $\tau_0$.
Page 261, line −1: $J$ should be $J_0$.
Page 261, line 12: change both $n$’s into $k$.
Page 265, line 12: $x_3\cos$ should be $x_3 = \cos$
Page 270, lines 9 and 12: $b_{mn}$ and $h_{mn}$ should be $b_{mn}$ and $h_{mn}$.
Page 298, line 9: change $u(0-,t)$ and $u(0+,t)$ into $u_x(0-,t)$ and $u_x(0+,t)$, respectively.

Chapter 6

Page 304, line −14: $E(v) = f_{13} \ldots$ should be $E(v) = \frac{1}{2} f_{13} \ldots$
Page 305, line 22: replace “there is a way” by “it is possible”.
Page 313, line −4: put $\sum_{j=1}^N x_j^2$ under square root.
Page 321, line −4: “form” should be “from”.
Page 322, line −4: change $u(-1)$ and $u(1)$ into $|u(-1)|$ and $|u(1)|$, respectively.
Page 348, lines −5, −13, −20: change 6.8 into 6.9, 6.10 into 6.11 and 6.11 into 6.12, resp.
Page 349, line −5: change 6.7 into 6.6.
Page 352, line 6 and page 353, lines 5 and 8: change 6.12 into 6.13.
Page 359, line 5: Replace “Then;” by “Then, if dimH = ∞:”.
Page 359, line 2: erase “If dimH = ∞” and add after \( \{ \lambda_m \} \): “either constitute a finite set or”.
Page 360, line 12: change “theorem 6.12” into “Theorem 6.13”.
Page 360, line 15: change \( a_{\lambda_0} (u, v) \) into \( a_{\lambda_0} (v, v) \).
Page 360, line 12: add at the end: “In particular we can consider \( S_\lambda \in L(H) \)”.
Page 360, line 4: change 7.4 into 6.15.
Page 360, line 3: change \( \sigma(S_{\lambda_0}) \) into \( \sigma(P(S_{\lambda_0})) \).
Page 365, line 15: \( u_{kj} \) should be \( u_{kj} \).

Chapter 7

Page 370, line 3: change \( \Omega \) into \( \mathbb{R}^3 \).
Page 373, line 4: change \( = \int_{\Omega \setminus B_1(0)} \eta_{\varepsilon} (y) \, dy \leq 1 \) into “\( \leq \int_{B_1(0)} \eta_{\varepsilon} (y) \, dy = 1 \)”.
Page 374, line 6: “that linear” should be “that a linear”.
Page 389, line 5: \( x_1^n \) should be \( x_1^n \).
Page 398, line 7, and Page 402, line 1: 7.26 should be 7.20.
Page 403, line 10: “identifies” should be “identify”.
Page 417, line 6: “turn” should be “turns”.
Page 419, line 3 “cotained” should be “contained”.
Page 425, line 3: \( \leq \int_T \| s_k \ldots \) should be \( \leq \int_T \| s_k \ldots \).
Page 428, line 1: \( \frac{1}{2\pi} \) should be \( \frac{1}{4\pi} \).
Page 457, line 2: “\( -f u \)” should be “\( -2f u \)”.

Chapter 8

Page 438, line 10: Proposition 6.6 should be Theorem 6.7.
Page 446, line 8: \( E(u) = \int_\Omega \ldots \) should be \( E(u) = \frac{1}{2} \int_\Omega \ldots \).
Page 446, line 7: change \( a_0 \) into \( \gamma_0 \).
Page 452, line 10: change Rayleigh to Rayleigh.
Page 452, formula (8.42): change “non identically zero” to “\( \neq 0 \) a.e.”.
Page 457, line 2: “\( -f u \)” should be “\( -2f u \)”.
Page 458, line 1: \( b \) should be \( c \).
Page 463, Remark 8.12: replace all lines 15 to 18 by “However, the boundary integral makes no sense if \( f \in L^2 (\Omega; \mathbb{R}^n) \) only, since \( \partial\Omega \) has \( n \)-dimensional measure zero.”.
Page 465, line 10 and Page 467, line 5: Change \( \inf_\Omega \geq \inf_{\partial\Omega} u^- \) into \( \inf_{\partial\Omega} u \geq \inf_{\partial\Omega} (-u^-) \).
Page 466, line 9: Change \( \inf_{\partial\Omega} u^- \) into \( \inf_{\partial\Omega} (-u^-) \).
Page 466, line 12: 6.12 should be 6.13.
Page 466, line 1: 8.18 should be 8.3.
Page 469, line 11: change “a_{ij} be” into “a_{ij} and b_j be”.
Page 471, in Figure 8.3 change 8.17 into 8.2.
Page 472, in Figure 8.4 change 8.18 into 8.3.
Page 475, line -4: “smooth domain” should be “smooth bounded domain”.
Page 476, line 9: “u_* \leq g \leq u^*” should be “u_* \leq u^*.”
Page 478, line 12: w_1 should be \sigma w_1.
Page 480, line -7: Proposition 6.4 should be Theorem 6.7.
Page 482, line 6: replace \( p(z - E[z]) \) by \(-pE[z]\).
Page 485, line -7: 1/\sqrt{2} should be 4/\sqrt{2}.
Page 485, Problem 8.4: change \( x < 1 \) and \( u(\pi/4) \) into \( x < \pi/6 \) and \( u(\pi/6) \).
Page 486, Line 2: There is a missing \( v \) before \( \in \).
Page 486, Line 7: \( V \) should be \( X \).

Chapter 9

Page 498, line 20: replace both \( \int_{\Omega} \) by \( \int_{0}^{T} \).
Page 500, formula (9.19): change \( \leq \|g\|_{V}^{2} \) into \( \leq 2 \|g\|_{0}^{2} \).
Page 503, line 5: replace \(-\alpha \) by \( \alpha \).
Page 503, line 9: \( \|u\|_{L^{2}(0,T;V)}^{2} \) should be \( \alpha \|u\|_{L^{2}(0,T;V)}^{2} \).
Page 504, line 4: replace both \( u_m(t) \) by \( \dot{u}_m(t) \).
Page 511, formula (9.39): change “\(-\alpha \cdots \)” into “\( \alpha \cdots \)”
Page 513, line -12: \(-\gamma_{0} \epsilon \) should be \(-\gamma \epsilon \).
Page 513, line -6: \( \lambda_0 > \gamma \) should be \( \lambda_0 > \gamma_0 \).
Page 520, line 12: replace “in \( H \)” by “in \( V \) and \( H \), respectively”.
Page 522, line -2: change “\( G(t) e^{\gamma t} \)” into “\( G(t) (e^{\gamma t} - 1) \)”.
Page 522, line -1: add: “Thus, \( \Psi(t) \leq G(t) + R(t) \leq G(t) e^{\gamma t} \)”.
Page 523, lines 3, -11, -9, -3: Replace \( 2c^2 \) by \( c^2 \).
Page 523, line 10: replace \( c^2 \) by \( 1/2 \).
Page 524, line 2: replace \( 2c^2 \) by \( c^2 \).
Page 525, line 2: change “Theorem 9.10 shows” into “Theorems 9.10 and 9.11 show”.
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