

Errata for the text “Circuit Simulation”

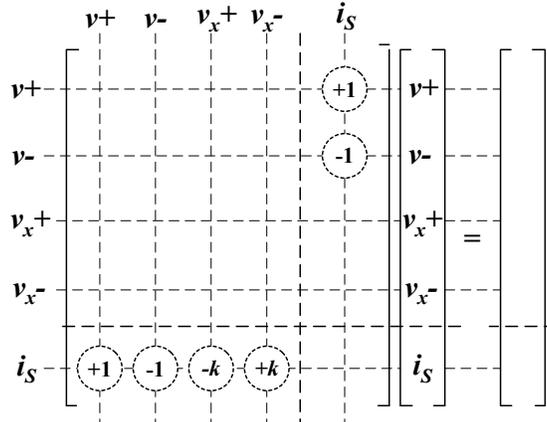
Farid N. Najm

Version 15 - February 2025

The items below are corrections to errors that exist in all printed versions of the book.

1. There are six instances of “Kirchoff’s ...,” that should all be corrected to say “Kirchhoff’s ...,” on the following pages. 1) On page 3, in the second line of section 1.2. 2) On page 19, in section 2.2 in the top half of that page before the heading of section 2.2.1, in the first line of the second item of the itemized list with the heading *Topological constraints*. 3) On page 21, in the second line above equation (2.9). 4) On page 22, in the line right above equation (2.13). 5) On page 306, in the Glossary, as the expansion of **KCL**. 6) On page 306, in the Glossary, as the expansion of **KVL**.
2. On page 4, the two-line sentence right below equation (1.5) should be revised (shortened) to say “With v_2 in hand, the element equation $i_2 = v_2/R_2$ can be used to solve for $i = i_1 = i_2$.”
3. On page 7, in the enumerated list of three items near the top of the page, in the first item, which starts with “Factor A as $A = LU$,” instead of “ L is lower-diagonal and U is upper-diagonal”, it should say “ L is lower-triangular and U is upper-triangular”.
4. On page 14, in the second line of the caption for Figure 2.2, instead of “for an on linear capacitor,” it should say “for a nonlinear capacitor”.
5. On page 23, in the few lines right after equation (2.20): delete the word “independent” in both the second and third lines and, in the fourth line replace “we can solve” by “we can try to solve”.
6. On page 25, in the fourth line from the top of the page, “When G is connected” should be corrected to say “When G_d is connected.”
7. On page 27, in the second paragraph of section 2.3.6, in the second line, “when G is connected” should be corrected to say “when G_d is connected.”
8. On page 28, in the line right after equation (2.35), delete the word “independent” from that line.
9. On page 29, at the end of the third line of the paragraph right after **Assumption 2.1.**, replace the word “Thévenin’s” by “Norton’s.”
10. On page 31, in the paragraph right before the heading **Irreducible Matrix**, the first line of that paragraph starts with “If a network is linear, ...” but it should instead say “If a network is connected, linear, ...”.
11. On page 33, after the first paragraph in section 2.4.4, in the 3rd item of the itemized list, the word “user-specified” should be replaced by “user-designated.”

12. On page 39, Figure 2.24 can be improved by adding the two new rows marked \mathbf{v}_x^+ and \mathbf{v}_x^- , as shown:



13. On page 58, in equation (3.27), replace each of the two instances of E_i by E_{k_i} . And, make an insertion at the start of the line right after that equation, so that the line reads “for some $(k_1, k_2, \dots, k_m) \in \{1, 2, 3\}^m$, leading to the triangulated ...”
14. On page 58, in the last line of the paragraph above equation (3.28), replace “simple systems” by “small systems.”
15. On page 64, in the line right after equation (3.48), the last term u_{ij} of the in-line equation should be changed to u_{jj} , so that the in-line equation reads “ $a_{ij} = \sum_{k=1}^j l_{ik}u_{kj} = \sum_{k=1}^{j-1} l_{ik}u_{kj} + l_{ij}u_{jj}$.”
16. On page 72, the second matrix in equation (3.76) needs to be fixed, so that the equation becomes:

$$\begin{bmatrix} L & 0 \\ X & \cdot \end{bmatrix} \begin{bmatrix} U & L^{-1}B \\ 0 & (D - CA^{-1}B) \end{bmatrix} = \begin{bmatrix} A & B \\ C & D \end{bmatrix} \quad (3.76)$$

17. On page 73, in the first line of the paragraph right before **Theorem 3.3.**, remove the “non-zero,” so that the phrase “for all non-zero $x \in \mathbb{R}^n$,” becomes “for all $x \in \mathbb{R}^n$,”. And, in that same paragraph, in the 3rd line, the sentence starts with “A matrix is positive ...” but it should instead say “A symmetric matrix is positive ...”.
18. On page 79, in equation (3.93), the term $\beta^{e_{max}(1-\beta^{t-1})}$ on the right should be changed to $\beta^{e_{max}(1-\beta^{-t})}$.
19. On page 88, fix the double occurrence “and and” in the line right after equation (3.137). Also, in the second line from the bottom of that page, “can be help” should be changed to “can help”.
20. On page 91, in the second line below equation (3.160), instead of “ n -dimensional”, it should say “ $(n - 1)$ -dimensional”.
21. On page 95, in the fourth line of the paragraph entitled **Fixing an Ill-Conditioned Problem**, replace the word “equilibrate” by “equalize”.

22. On page 99, the algorithm in Figure 3.13 (The Gauss-Jacobi algorithm) is somewhat unclear should be replaced by this:

```

 $x^{(0)} = 0$ 
 $k = -1$ 
repeat
   $k = k + 1$ 
  for  $(i = 1, \dots, n)$  do
     $x_i^{(k+1)} = b_i$ 
    for  $(j = 1, \dots, i - 1)$  do
       $x_i^{(k+1)} = x_i^{(k+1)} - a_{ij}x_j^{(k)}$ 
    for  $(j = i + 1, \dots, n)$  do
       $x_i^{(k+1)} = x_i^{(k+1)} - a_{ij}x_j^{(k)}$ 
     $x_i^{(k+1)} = x_i^{(k+1)} / a_{ii}$ 
until  $\|x^{(k+1)} - x^{(k)}\| \leq \epsilon_{\text{rel}} \|x^{(k)}\| + \epsilon_{\text{abs}}$ 

```

23. On page 100, the algorithm in Figure 3.14 (The Gauss-Seidel algorithm) is somewhat unclear and should be replaced by this:

```

 $x^{(0)} = 0$ 
 $k = -1$ 
repeat
   $k = k + 1$ 
  for  $(i = 1, \dots, n)$  do
     $x_i^{(k+1)} = b_i$ 
    for  $(j = 1, \dots, i - 1)$  do
       $x_i^{(k+1)} = x_i^{(k+1)} - a_{ij}x_j^{(k+1)}$ 
    for  $(j = i + 1, \dots, n)$  do
       $x_i^{(k+1)} = x_i^{(k+1)} - a_{ij}x_j^{(k)}$ 
     $x_i^{(k+1)} = x_i^{(k+1)} / a_{ii}$ 
until  $\|x^{(k+1)} - x^{(k)}\| \leq \epsilon_{\text{rel}} \|x^{(k)}\| + \epsilon_{\text{abs}}$ 

```

24. On page 101, in the first line of the paragraph right before equation (3.199), fix the double occurrence “of of” by removing the first (italicized) “of”.
25. On page 104, in the very first line, in the in-line equation $\det(\lambda I - M_{GJ})^{-1} = \lambda^3$, the “-1” superscript should be removed, so that the equation becomes $\det(\lambda I - M_{GJ}) = \lambda^3$.
26. On page 109, delete the third sentence of section 3.5 (Sparse Matrix Techniques), i.e., the sentence that reads “Indeed, given the preceding observations, it can be shown that the average vertex degree in a large network graph should be less than some upper bound which is in the range 6–12.”
27. On page 136, in the line right above equation (4.24) the expression $\mathbb{R}^n \rightarrow \mathbb{R}^n$ should be revised to say $\mathbb{R}^n \rightarrow \mathbb{R}^m$.
28. On page 146, in the first line of the paragraph right after Theorem 4.3, instead of starting with “Thus if, the graph of the function ...”, it should start with “Thus if, for all $a \leq x \leq b$, the graph of the function ...”.

29. On page 147, in the 3rd line of the paragraph right after Theorem 4.5, insert “with $\phi(x^*) \neq 0$ ” right after the equation $g(x) = x - \phi(x)f(x)$, so that the line should say “... choose $g(x) = x - \phi(x)f(x)$ with $\phi(x^*) \neq 0$ and, ...”.
30. On page 168, in the last line of the block of text right after equation (4.141), the last word in that line is “axes” but that should be changed to “axis”.
31. On page 188, in the line right before equation (4.212), the word “it’s” should be changed to “its”.
32. On page 219, in the 2nd paragraph from the bottom of that page, starting on the 5th line of that paragraph, delete the sentence that reads “It is equivalent to saying that the difference system is well-posed”.
33. On page 223, in the paragraph right before equation (5.94), in the first line, instead of “ $(p + 1)$ ”, it should say “ $(p + 2)$ ”.
34. On page 226, in the paragraph right before equation (5.105), in line 4, instead of “ $(p + 1)$ ”, it should say “ $(p + 2)$ ”.
35. On page 229, in the line right after equation (5.125), instead of “setting $t_n = 0, \dots$ ” it should say “setting $t_n = 0$ and $h = 1, \dots$ ”.

36. On page 229, in equation (5.127), insert an h right before the Σ on the right hand side, so it becomes:

$$x_{n+1} + \sum_{j=0}^{k-1} \alpha_j x_{n-j} = h\beta_{-1}f(x_{n+1}, t_{n+1}) + h \sum_{j=0}^{k-1} \beta_j f(x_{n-j}, t_{n-j}) \quad (5.127)$$

37. On page 230, in equation (5.129), insert an h right before the Σ on the right hand side, so it becomes:

$$\psi_n \triangleq - \sum_{j=0}^{k-1} \alpha_j x_{n-j} + h \sum_{j=0}^{k-1} \beta_j f(x_{n-j}, t_{n-j}) \quad (5.129)$$

38. On page 235, delete “ $\delta_0(0) = 0,$ and” from equation (5.158), so that the equation becomes simply:

$$\delta_i(0) = 1/i, \forall i = 1, 2, \dots \quad (5.158)$$

39. On page 235, the left hand side of equation (5.160) should be modified so that the equation becomes:

$$f_{n+1} = \frac{1}{h} \sum_{i=1}^k \frac{1}{i} \nabla^i x_{n+1} \quad (5.160)$$

40. On page 252, in the first line of text in section 5.4.4, change “phenomena” to “phenomenon” and likewise, in the third line of that same paragraph, change “phenomena” to “phenomenon”.
41. On page 256, in section 5.4.6, the second item in the second itemized list starts with “TR is the prototypical A-stable system ...” but it should be changed to say “TR is the prototypical A-stable method ...”.
42. On page 256, in section 5.4.6, the third item in the second itemized list which starts with “Some methods, like BE and ...”, in the third line, delete the word “small” so that it should read “... have eigenvalues with positive real ...”.

43. On page 263, the second line from the bottom of the block of text below equation (5.263) currently reads “denote $t_{n+1}^{(\alpha)}, t_{n+2}^{(\alpha)}$, etc., where $t_n^{(\alpha)} = t_n$ and $\alpha h = t_{n+1}^{(\alpha)} - t_n^{(\alpha)} = t_{n+2}^{(\alpha)} - t_{n+1}^{(\alpha)} = \dots$.” but it should be changed to read “denote $t_{n+1}^{(\alpha)}, t_n^{(\alpha)}$, etc., where $t_n^{(\alpha)} = t_n$ and $t_{n+1}^{(\alpha)} - t_n^{(\alpha)} = \alpha h = t_n^{(\alpha)} - t_{n-1}^{(\alpha)} = \dots$.”
44. On page 274, in the paragraph entitled **A Note on Initialization**, the second last sentence in that paragraph currently ends with: “... they are all set to zero.” You should add an extension to that sentence, so that it would end with: “... they are all set to zero initially, then can be maintained and evolved during the pseudo-transient simulation, until the end of DC Analysis.”
45. On page 274, the fraction in equation (5.310) should be inverted, so that the revised equation becomes:

$$G_{n+1}^{(k)} = \frac{h}{L} \quad \text{and} \quad I_{n+1}^{(k)} = i_n \quad (5.310)$$

46. On pages 281 and 282, there is a common error in equations (5.344), (5.346) and (5.347). Once corrected, these equations should be as follows:

$$g'_C(u_{n+1}) = \frac{10^{-12}/h}{\sqrt{1+2u_{n+1}}} \left(\frac{u_{n+1} + u_n + 1}{1 + 2u_{n+1}} \right) \quad (5.344)$$

$$G_{n+1}^{(k)} = \frac{10^{-12}/h}{\sqrt{1+2u_{n+1}^{(k)}}} \left(\frac{u_{n+1}^{(k)} + u_n + 1}{1 + 2u_{n+1}^{(k)}} \right) \quad (5.346)$$

$$I_{n+1}^{(k)} = \frac{10^{-12}/h}{\sqrt{1+2u_{n+1}^{(k)}}} \left(\frac{u_{n+1}^{(k)2} - 3u_n u_{n+1}^{(k)} - u_n}{1 + 2u_{n+1}^{(k)}} \right) \quad (5.347)$$

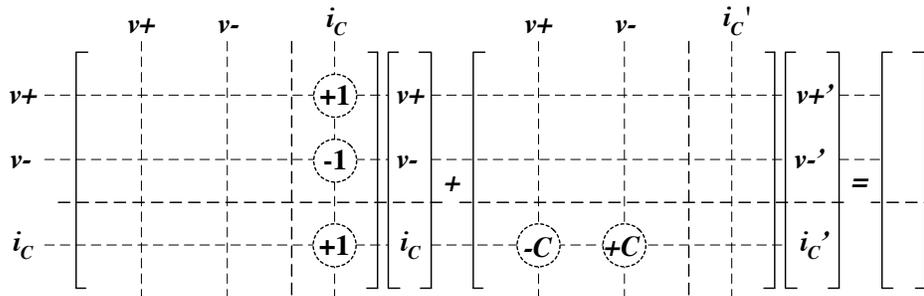
47. There is a technicality in the example that starts on page 285 (mid-page, right after the 2nd paragraph from the top of the page, with the heading **Example**) and ends near the bottom of the next page (286), right before the start of the paragraph entitled **Sensitivity and Stability**, which makes this example somewhat useless. You should delete that whole example, including its heading and the Figure 5.21.
48. On page 297, in the line right above equation (5.417), the line ends with “ $x^{(p+1)}(t_n) \approx x^{(p+1)}(t_{n-1})$, then, $\forall i$.” but should be modified to read “ $x^{(p+1)}(t_{n+1}) \approx x^{(p+1)}(t_n)$, then, $\forall i$.”

The items below have been fixed in the second printing of the book, done in January 2019.

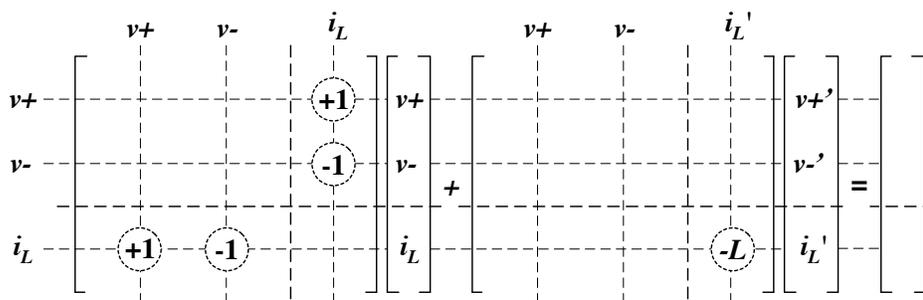
1. On page 16, in Figure 2.7, remove the “(a)” and “(b)” annotations right under the figure.
2. On page 21, in the 4th line of the paragraph above equation (2.9), it says $u = [u_0 \ u_1 \ \cdots \ u_m]^T$, but it should say $u = [u_1 \ u_2 \ \cdots \ u_m]^T$.
3. On page 21, the sentence starting at the bottom line of that page, saying “By convention, let $p_0 = 0$ at the reference node, so that:” continuing into page 22 should be replaced by “However, because the rows of M add up to the zero vector, then $M^T [p_0 \ p_0 \ p_0 \ \cdots \ p_0]^T = [0 \ 0 \ 0 \ \cdots \ 0]^T$, so that:”.
4. On page 31, in equation (2.42), the g_{ii} on the left-hand-side should be the absolute value $|g_{ii}|$. Once corrected, the equation should be as follows:

$$|g_{ii}| > \sum_{\forall j \neq i} |g_{ij}|$$

5. On page 32, the second paragraph from the top, right above the section heading **Positive Definite**, should be replaced by this: “For a connected, linear, resistive circuit, with no controlled sources and no voltage sources, that meets the consistency requirements, if the graph consisting of all the circuit resistors not connected to ground and all the circuit nodes other than ground is a connected graph, then G is irreducibly diagonally dominant, so that G^{-1} exists and the network is uniquely solvable.”
6. On page 32, in the paragraph right below equation (2.45), the sentence that starts with “For a connected, linear, resistive circuit ...” should be replaced with this: “For a connected, linear, resistive circuit, with no controlled sources and no voltage sources, that meets the consistency requirements, if the graph consisting of all the circuit resistors not connected to ground and all the circuit nodes other than ground is a connected graph, then G is an M -matrix.”
7. On page 32, in the 2nd line from the bottom, that sentence should start with “For each of” instead of “For of”.
8. On page 35, in the 2nd numbered list, in item number 1, the 3rd line starts “elements connected to the reference ...” but should be corrected to say “currents of elements connected to the reference ...”.
9. This item is not exactly an error but it is potentially confusing, so it’s worth correcting. On page 39, in equation (2.58), the third line in the matrix should be $(1 \ -1 \ -1 \ 0)$, in order to be consistent with Table 2.2 on page 36. In other words, you should flip the signs in that row relative to the original printing of 2010. Correspondingly, you should flip the signs in the bottom row of the table for e_3 on the left-hand-side in Table 2.9 on page 41, so that $(i_3 \ -1 \ +1 \ +1)$ is changed to $(i_3 \ +1 \ -1 \ -1)$.
10. On page 44, figure 2.30 is wrong and should be corrected to look as follows:



11. On page 44, figure 2.32 is wrong and should be corrected to look as follows:



12. On page 46, the statement of problem 2.5 should be changed to this: “If, in addition to the conditions of problem 2.3, we further require that the network is connected and meets the consistency requirements, show that, if the graph consisting of all the circuit resistors not connected to ground and all the circuit nodes other than ground is a connected graph, then G is irreducibly diagonally dominant.”

13. On page 59, in the bottom row of the left-hand-side part of equation (3.33), it says $y_2 + 3x_3 = 1$, but x_3 should be replaced with y_3 so that, once corrected, it should say $y_2 + 3y_3 = 1$.

14. On page 76, in the paragraph below equation (3.86), the 2nd line from the bottom includes “... of the first (3.84) is called ...” but should be corrected to say “... of the first condition (3.84) is called ...”.

15. On page 77, in the section at the bottom of the page, entitled **Forward Error**, it starts with “We denote the *forward error* by $\Delta y \triangleq |\tilde{y} - y|$ or, ...” but should be corrected to say “We define $\Delta y \triangleq \tilde{y} - y$ and denote the *forward error* by $|\Delta y| = |\tilde{y} - y|$, or ...”.

16. On page 87, in equation (3.133), the right-hand-side vector $\begin{bmatrix} 5.20 \\ 5.47 \end{bmatrix}$ should be replaced by $\begin{bmatrix} 5.20 \\ 4.57 \end{bmatrix}$.

17. On page 88, in equation (3.139), the right-hand-side vector $\begin{bmatrix} 5.47 \\ 5.20 \end{bmatrix}$ should be replaced by $\begin{bmatrix} 4.57 \\ 5.20 \end{bmatrix}$.

18. On page 88, in equation (3.140), the right-hand-side vector $\begin{bmatrix} 5.47 \\ 5.19 \end{bmatrix}$ should be replaced by $\begin{bmatrix} 4.57 \\ 5.20 \end{bmatrix}$.

19. On page 88, in equation (3.141), the right-hand-side vector $\begin{bmatrix} 2.09 \\ 2.14 \end{bmatrix}$ should be replaced by $\begin{bmatrix} 1.17 \\ 2.15 \end{bmatrix}$.

20. On page 88, in equation (3.142), the right-hand-side vector $\begin{bmatrix} 0.01911 \\ -0.0012 \end{bmatrix}$ should be replaced by $\begin{bmatrix} 0.003 \\ -0.00417 \end{bmatrix}$.

21. On page 92, in equation (3.162) the signs in the matrix A^{-1} on the right-hand-side should be reversed so that, once corrected, the equation should read:

$$A = \begin{bmatrix} 1.0 & 2.0 \\ 2.0 & 3.999 \end{bmatrix} \quad A^{-1} = \begin{bmatrix} -3,999 & 2,000 \\ 2,000 & -1,000 \end{bmatrix}$$

22. On page 96, the third line of the paragraph right above the section heading **Mixed Precision Iterative Refinement** starts with “true for \tilde{z} and \tilde{x}' (“garbage in, garbage out”). But, ...”. It should be corrected to say “true for \tilde{z} (“garbage in, garbage out”). But, ...”, i.e., “and \tilde{x}' ” should be deleted.

23. On page 104, in the second line from the bottom, the phrase “these are called” should be corrected to say “this is called”.

24. On page 112, in the 2nd line below equation (3.229), the word “unsable” should be “unusable”.
25. On page 117, in the bottom half of the page there is a numbered list of three items, where the first item includes “... number of multiplications to be performed ...”. This should be corrected to say “... number of multiplications and divisions to be performed ...”.
26. On page 121, in the paragraph right below equation (3.248), in the first sentence, the phrase “becomes equivalent to minimizing $r_i^{(k)}$ (equivalently, $c_i^{(k)}$)” should be replaced with “becomes equivalent to minimizing $(r_i^{(k)} - 1)$ or, equivalently $(c_i^{(k)} - 1)$ ”. In the next sentence, the phrase “Furthermore, $r_i^{(k)} = c_i^{(k)}$ is the vertex *degree*” should be replaced by “In fact, $(r_i^{(k)} - 1) = (c_i^{(k)} - 1)$ is the vertex *degree*”.
27. On page 122, in the paragraph right above section 3.5.8 (**Extension to the Non-SPD Case**) the first line includes $\mathcal{O}(|V|^2E)$ but this should be changed to $\mathcal{O}(|V|^2|E|)$.
28. On page 132, in the equation right after equation (4.13), and in the one right after equation (4.14), the top-right entry of the G matrix (the large matrix on the left-hand side) should be 1 instead of 0.
29. On page 136, the left-hand-side of equation (4.25) should be changed from $J(x)_{ij}$ to $J_{ij}(x)$.
30. On page 136, in the paragraph right below equation (4.25), in the fourth line, the phrase “First, the function $f(x)$ must have” should be changed to “First, the equation $f(x) = 0$ must have.”
31. On page 141, in the line right below equation (4.36), the phrase “and the solution is $x^* = \sqrt{a}$, starting” should be replaced by “and we are interested in the positive solution $x^* = \sqrt{a}$, starting”.
32. On page 142, the short paragraph right below equation (4.41) should be replaced with this: “It is evident from this that the error does not necessarily decrease in every iteration – it depends on the value of $\mathcal{E}_k/|2x_k|$. If x_0 is closer to \sqrt{a} than to $-\sqrt{a}$, in this case if $x_0 > 0$, then the algorithm will converge to the solution of interest, $x^* = \sqrt{a}$.”
33. On page 163, in the line right below equation (4.123), the word “brace” should be changed to “braces”.
34. On page 165, in equation (4.137), the n^+ and n^- at the far left-hand-side should be changed to v^+ and v^- , respectively. Once corrected, this equation should read as follows:

$$\begin{array}{cccc|c}
 & v^+ & & v^- & \text{RHS} \\
 & \vdots & & \vdots & \vdots \\
 v^+ & \cdots & +G_{eq}^{(k)} & \cdots & -I_{eq}^{(k)} \\
 & \vdots & & \vdots & \vdots \\
 v^- & \cdots & -G_{eq}^{(k)} & \cdots & +I_{eq}^{(k)} \\
 & \vdots & & \vdots & \vdots
 \end{array}$$

35. On page 169, in equation (4.144) at the top-right, the comma should be changed to a semi-colon. Once corrected, this equation should read as follows:

$$f(x, y) = \begin{cases} \frac{xy^2}{x^2+y^2}, & \text{for } (x, y) \neq (0, 0); \\ 0, & \text{for } (x, y) = (0, 0). \end{cases}$$

36. On page 171, in the bottom line, replace the word “inearizing” by “linearizing”.

37. On page 175, in equation (4.172), in the middle case (linear), the expression for the current should be further multiplied by $(1 + \lambda v_{ds})$. Once corrected, the equation should be as follows:

$$i_d = \begin{cases} 0, & \text{if } v_{gs} \leq V_t \text{ (cut-off);} \\ \beta [(v_{gs} - V_t)v_{ds} - \frac{1}{2}v_{ds}^2] (1 + \lambda v_{ds}), & \text{if } 0 \leq v_{ds} \leq v_{gs} - V_t \text{ (linear);} \\ \frac{\beta}{2}(v_{gs} - V_t)^2(1 + \lambda v_{ds}), & \text{if } 0 \leq v_{gs} - V_t \leq v_{ds} \text{ (saturation).} \end{cases}$$

38. On page 175, in the displayed equation that gives the value of G_{ds} , in the middle case (linear), the expression for G_{ds} should be changed to: $(\beta/2)\lambda v_{ds}^2 + \beta(v_{gs} - V_t - v_{ds})(1 + 2\lambda v_{ds})$. Once corrected, the equation should be as follows:

$$G_{ds} \triangleq \frac{\partial i_d}{\partial v_{ds}} = \begin{cases} 0, & \text{if } v_{gs} \leq V_t; \\ \frac{\beta}{2}\lambda v_{ds}^2 + \beta(v_{gs} - V_t - v_{ds})(1 + 2\lambda v_{ds}), & \text{if } 0 \leq v_{ds} \leq v_{gs} - V_t; \\ \frac{\beta}{2}\lambda(v_{gs} - V_t)^2, & \text{if } 0 \leq v_{gs} - V_t \leq v_{ds}. \end{cases}$$

39. On page 175, in the displayed equation that gives the value of g_m , in the middle case (linear), the expression for g_m should be changed to: $\beta v_{ds}(1 + \lambda v_{ds})$. Once corrected, the equation should be as follows:

$$g_m \triangleq \frac{\partial i_d}{\partial v_{gs}} = \begin{cases} 0, & \text{if } v_{gs} \leq V_t; \\ \beta v_{ds}(1 + \lambda v_{ds}), & \text{if } 0 \leq v_{ds} \leq v_{gs} - V_t; \\ \beta(v_{gs} - V_t)(1 + \lambda v_{ds}), & \text{if } 0 \leq v_{gs} - V_t \leq v_{ds}. \end{cases}$$

40. On page 176, in equation (4.179), the expression for the current in the middle case should be further multiplied by $(1 + \lambda v_{ds}^{(k)})$. Once corrected, the equation should be as follows:

$$i_d^{(k)} = \begin{cases} 0, & \text{if } v_{gs}^{(k)} \leq V_t; \\ \beta [(v_{gs}^{(k)} - V_t)v_{ds}^{(k)} - \frac{1}{2}v_{ds}^{(k)2}] (1 + \lambda v_{ds}^{(k)}), & \text{if } 0 \leq v_{ds}^{(k)} \leq v_{gs}^{(k)} - V_t; \\ \frac{\beta}{2}(v_{gs}^{(k)} - V_t)^2 (1 + \lambda v_{ds}^{(k)}), & \text{if } 0 \leq v_{gs}^{(k)} - V_t \leq v_{ds}^{(k)}. \end{cases}$$

41. On page 189, equation (4.217) should be corrected to look like this:

$$h(x, \lambda) = (1 - \lambda)G_{\min} \begin{bmatrix} I & 0 \\ 0 & 0 \end{bmatrix} x + Gx + Hg(x) - s$$

and the two lines right below that equation should be replaced by this: “where the size of the identity matrix I is the number of nodes, so that, with $\lambda = 0$, we can easily find a solution x_0 , which is close to zero and, with $\lambda = 1$, we get the desired solution x^* of the original system.”

42. On page 206, in **Definition 5.1**, there are three occurrences of the variable r , namely in $r \in \mathbb{R}$, $F(r)$ and $\|F(r)\|$. In these three expressions, r should be replaced by h . Once corrected, the statement of the definition should read as follows: “If $h \in \mathbb{R}$ and $F(h)$ is either a scalar or a vector, and if there is a constant $K > 0$ such that $\|F(h)\| \leq Kh^p$ for sufficiently small $|h|$, then we write:”. Other than this, the rest of the definition is fine as is, i.e., equation (5.20) is fine and requires no changes or corrections.
43. On page 208, in the line right below equation (5.31), the phrase $\delta_0 \in \mathbb{R}$ should be replaced by $\delta_0 \in \mathbb{R}^m$.
44. On page 212, in the paragraph right below equation (5.48), the first sentence (which spans three lines) should be replaced by the following combination of two sentences: “Notice that, even though the LTE is $0(h^2)$, this bound on the global truncation error is reduced linearly with decreasing h , i.e., it is $0(h)$, assuming t_n is fixed. On the other hand, if h is fixed but t_n is not, then the bound grows exponentially in t_n , so that truncation errors may indeed accumulate and grow over time.”

45. On page 233, in the line right before equation (5.148) β_{n-j} should be changed to β_j .
46. On page 234, equation (5.149) should say $= 0$ at the end, as follows:

$$C_0 = C_1 = \dots = C_p = 0$$

47. On page 249, the paragraph around the middle of the page starts with “What do we learn from the region of absolute stability FE?”. This should have the word “of” inserted before “FE” so that, once corrected, it should say “What do we learn from the region of absolute stability of FE?”.
48. On page 250, the paragraph around the middle of the page starts with “What do we learn from the region of absolute stability BE?”. This should have the word “of” inserted before “BE” so that, once corrected, it should say “What do we learn from the region of absolute stability of BE?”.
49. On page 251, the paragraph near the bottom of the page starts with “What do we learn from the region of absolute stability TR?”. This should have the word “of” inserted before “TR” so that, once corrected, it should say “What do we learn from the region of absolute stability of TR?”.
50. On page 261, in the 2nd line of text after equation (5.262), it says “... in the sense that is only accurate ...”. The word “it” should be inserted between “that” and “is”.
51. On page 262, in the first paragraph of section **5.6.1 Implementing a Change of Time-Step**, in the 3rd line from the bottom of that paragraph, $(x_{n+1} - x_n)$ should be changed to $(t_{n+1} - t_n)$.
52. On page 286, in the 2nd line of the paragraph right below equation (5.364), $v_0^2/4$ should be changed to $v_0/2$. The second occurrence of $v_0^2/4$ in that sentence is correct and should not be changed.
53. On page 289, the left-hand-side of equation (5.383) should say $i(t_{n+1})$ instead of i_{n+1} .
54. On page 295, the line right below equation (5.410) should be replaced by “Several conclusions follow from this. For one thing, it can be shown that:”. Also, equation (5.411) should be revised slightly so that, once corrected it should be as follows:

$$\sum_{j \neq i} C_{ij} = \sum_{j \neq i} C_{ji}, \quad \forall i, j \in \{g, b, d, s\}$$

55. On page 296, equation (5.413) should be multiplied by the vector $[1 \ 1 \ \dots \ 1]^T$ on the right-hand-side so that, once corrected, it should look like this:

$$\text{PLTE} \leq \epsilon \triangleq \epsilon_{rel}|x_{n+1}| + \epsilon_{abs} [1 \ 1 \ \dots \ 1]^T$$

Then, in the 3rd line of the paragraph right below equation (5.413), the phrase “the largest value” should be changed to “the largest absolute value”. Then, equation (5.414) should be multiplied by the vector $[1 \ 1 \ \dots \ 1]^T$ on the right-hand-side so that, once corrected, it should look like this:

$$\text{PLTE} \leq \epsilon \triangleq \epsilon_{rel}|x'(t_{n+1})| + \epsilon_{abs} [1 \ 1 \ \dots \ 1]^T$$