Proposed Errata

Griffiths, D. F., and Desmond J. Higham.
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Compiled by Sajjad K. Monfared

– Negative line numbers are counted from the bottom of the page (excluding the footer).

Chapter 2		
P.28	Line 16	At the end of the line, replace $e^{\lvert\lambda\rvert,t_f}$ with $e^{\lvert\lambda\rvert t_f}$ (remove the comma).
Chapter 3		
P.41	Ex. 3.11	In the last equation in this exercise, replace $g(t_n)$ with $g^{(p-1)}(t_n)$. (We are using successive derivatives of $g(t)$)
Chapter 4		
P.47	Fig. 4.1	• Change the ylabel of the RHS figure from x_n to e_n. • The legend of the RHS figure crosses the margins.
Chapter 5		
P.62	Mult.	• Line 5: "IVPsof " should read "IVPs of ". • Line 6: "IVPsor " should read "IVPs or ".
P.70	Line 16	"LTEis" should read "LTE is".
Chapter 6		
P.66	Item 3	Remove the extra 's' in "*Nyström method (1925)*:s"
P.94	Line 5	"if, and only if" part seems to be wrong. The result depends on the value of γ: $\begin{cases} -\frac{2}{1-\gamma^2} < \widehat{h} < 0 & 0 < \gamma \leq \frac{1}{\sqrt{2}} \\ \{\frac{-2}{1-\gamma^2} < \widehat{h} < h_1^*\} \cup \{h_2^* < \widehat{h} < 0\} & \frac{1}{\sqrt{2}} < \gamma < 1 \end{cases}$ Where h_1^* and h_2^* are the two distinct roots of $R(\hat{h})$. As we can see, in the second case, interval of absolute stability comprises of the union of two disjoint intervals. See FILE *.
Chapter 7		

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P.96 Mult.

- Results of the numerical computations for u_2' and v_2' are incorrect. The correct numerical values are

$$u_2' = -t_2 u_2 v_2 = -0.35$$
$$v_2' = -u_2^2 = -0.94$$

- Some of the numerical values in Table (7.1) are incorrect. The correct values are given in the following table. Updated cells are colored in gray.

n	t_n	u_n	v_n	u_n'	v_n'	
0	0	1.0000	2.0000	0	-1.0000	Initial data
1	0.1000	1.0000	1.9000	-0.3497	-0.9438	Euler's Method
2	0.2000	0.9715	1.8000	-0.1900	-1.0000	$\mathrm{AB}(2)$
3	0.3000	0.9282	1.7084	-0.4759	-0.8622	$\cdots$

Chapter 9

P.131 Table 9.7 Coefficient b_2 for the RHS Butcher table is wrongly printed as $\frac{4}{3}$. The correct value is $\frac{2}{3}$.

P.133 Ex. 9.7 4^{th} decimal place in Improved Euler method is not accurate: Replace $\underline{1.094}000$ with $\underline{1.094}000$. See FILE *.

Chapter 10

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P.139 Mult.

- The Butcher array for the improved Euler method must be corrected to:

$$\begin{array}{c|cc} 0 & 0 & \\ 1 & 1 & 0 \\ \hline & \frac{1}{2} & \frac{1}{2} \end{array}$$

- Subsequent computations for the first step ($n = 0$) must be corrected. Updated cells are colored in gray.

$$\begin{aligned} n = 0: \quad & t_0 = 0, \\ & k_1 = -t_0 u_0 v_0 = 0, \\ & l_1 = -u_0^2 = -1, \\ & k_2 = -(t_0 + h)(u_0 + h k_1)(v_0 + h l_1) = -0.19, \\ & l_2 = -(u_0 + h k_1)^2 = -1, \\ & u_1 = u_0 + \tfrac{h}{2}(k_1 + k_2) = 0.9905, \\ & v_1 = v_0 + \tfrac{h}{2}(l_1 + l_2) = 1.9, \\ & t_1 = 0.1. \end{aligned}$$

- The numerical values given in Table (10.2) are incorrect. The correct values are given in the following table. Updated cells are colored in gray.

n	t_n	$\boldsymbol{k}_1$	$\boldsymbol{k}_2$	$\boldsymbol{x}_n = \begin{bmatrix} u_n \\ v_n \end{bmatrix}$	
0	0.0			1	
				2	Initial data
1	0.1	0.0000	-0.1900	0.9905	
		-1.0000	-1.0000	1.9000	
2	0.2	-0.1882	-0.3502	0.9636	
		-0.9811	-0.9442	1.8037	

Chapter 11

P.154 Mult.

- At line 2, replace $\mathcal{O}(h_n^2)$ with $\mathcal{O}(h_n^3)$.
- At line 5, replace the negative sign with a plus sign in the middle:

$$x'(t_{n+1}) = x'(t_n) + h_n x''(t_n) + \mathcal{O}\left(h_n^2\right)$$

P.147 Footnote C_{p+2} should read C_{p+1}.

P.149 Line 4 $|T_0|$ should read $|\hat{T}_1|$.

Chapter 12

Continued on next page

P.166	Mult.	• At line 5, since 0 represents the zero *vector*, it is better to use a boldfaced $\mathbf{0}$: Replace $\boldsymbol{f}(\boldsymbol{x}^*) = 0$ with $\boldsymbol{f}(\boldsymbol{x}^*) = \mathbf{0}$. • At line 7, since 0 represents the zero *vector*, it is better to use a boldfaced $\mathbf{0}$: Replace $\boldsymbol{f}(\boldsymbol{x}^*) = 0$ with $\boldsymbol{f}(\boldsymbol{x}^*) = \mathbf{0}$.
P.173	Item 4	Replace $1 < h < \frac{1}{2}(-1+\sqrt{5}) \approx 0.62$ with $0 < h < \frac{1}{2}(-1+\sqrt{5}) \approx 0.62$.
Chapter 13		
P.178	Line -1	The expression in parentheses which represents $y''(t)$ seems to be inaccurate. The complete expression for $y''(t)$ involves additional terms: $$\left(\frac{\mathrm{d}f}{\mathrm{d}y}(y(t))f(y(t)) + h^{2p}\frac{\mathrm{d}g}{\mathrm{d}y}(y(t))g(y(t)) + h^p\left(\frac{\mathrm{d}g}{\mathrm{d}y}(y(t))f(y(t)) + \frac{\mathrm{d}f}{\mathrm{d}y}(y(t))g(y(t))\right)\right)$$
P.179	Line 7	The term $f(y(t_n))$ is missing in the given equation. It should be corrected to $$\widehat{T}_{n+1} = h^2\left(g\left(y\left(t_n\right)\right) + \frac{1}{2}\frac{\mathrm{d}f}{\mathrm{d}y}\left(y\left(t_n\right)\right)f(y(t_n))\right) + \mathcal{O}(h^3)$$
P.180	Line 9	It seems that $\mu < \lambda$ is always satisfied and the specified condition $1 + \frac{1}{2}\lambda h > 0$ is unnecessary. This is because: $$\mu < \lambda \iff \lambda(1 - \frac{1}{2}\lambda h) < \lambda \iff \lambda - \frac{1}{2}\lambda^2 h < \lambda \iff \lambda^2 h > 0,$$ where the final inequality always holds.
P.181	Ex. 13.2	• Equations (13.9) and (13.10) should be corrected to (remove the extra y inside the bracket and add a missing 2): $$y'(t) = [1 - h(1-2y)](2y)(1-y) \quad (13.9)$$ $$y'(t) = [1 + h(1-2y)](2y)(1-y) \quad (13.10)$$ • At line -11, $0.5 < y < 1$ should be replaced with $0 < y < 0.5$. • At Lines -11 and -8, the conditions $y'(t) < y(1-y)$ and $y'(t) > y(1-y)$ should be replaced with $y'(t) < 2y(1-y)$ and $y'(t) > 2y(1-y)$, respectively. This is because we are comparing $y'(t)$ with $f(y)$ which has a factor of 2.
P.186	Line -2	The term $\mathcal{O}(h^4)$ should be removed.

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P.187	Mult.	• At line 5, $-\frac{1}{2}h^2 - \boldsymbol{x}(t)$ should be replaced with $-\frac{1}{2}h^2\boldsymbol{x}(t)$. • At line 6, $(\frac{1}{3!}A + B)$ should be replaced with $(\frac{1}{3!}A - B)$. • At line 10, $\frac{1}{12}\begin{bmatrix} 0 & -1 \\ 2 & 0 \end{bmatrix}$ should be replaced with $\frac{1}{12}\begin{bmatrix} 0 & 1 \\ 2 & 0 \end{bmatrix}$. • In Eq.(13-24), $(1 + \frac{1}{12}h^2)$ should be replaced with $(1 - \frac{1}{12}h^2)$. See FILE *.
P.188	Eq. 13.26	Use circumflex for the LTE associated with modified equation to maintain consistency throughout the whole chapter: Replace T_{n+2} with $\widehat{T}_{n+2}$.
P.189	Line 2	Use circumflex for the LTE associated with modified equation to maintain consistency throughout the whole chapter: Replace T_{n+2} with $\widehat{T}_{n+2}$.
P.191	Ex. 13.3	At the first line of this exercise, $\mathcal{O}(h^3)$ should be replaced with $\mathcal{O}(h^4)$.
Chapter 14		
P.203	Line -13	Remove the extra ')' in "(9.5))".
Chapter 15		
P.210	Line -8	It may also be mentioned that a unit length is assumed for the rod.
P.214	Line -9	The resulting matrix $\begin{bmatrix} 0 & 1+h^2\cos q_n \\ -1-h^2\cos q_n & 0 \end{bmatrix}$ is expected to match J for symplecticness, not the identity matrix.
Chapter 16		
P.229	Line 1	It seems that the x-axis is being divided into bins rather than the y-axis.
Bibliography		
P.264	Ref [55]	Remove the question mark in "P. Munz, I. Hudea, J. Imad, and R. J. Smith?".