Errata for the book by Ascher and Petzold

July 17, 2006

In this file we have collected various changes to be made to our book "Computer Methods for Ordinary Differential Equations and Differential-Algebraic Equations". Several have been corrected in the second printing of the book, June, 2003. The fresher batch is listed first.

You are welcome to mark these changes in your copy of the book, and to inform us if you find more of these bugaboos.

Additinal errata for the second printing

1. *p. 8 l. -9* Replace $u(x_i, t)$ by $u(t, x_i)$

2. *p. 15 l. 5* Strikwerda [91] or Strang and Fix [90]).

3. *p. 114 l. 8* Replace $D = 90.5 * .4814\text{e} - 3$ by $D = 90.5 * .4184\text{e} - 3$

4. *p. 180 l. -8* Change sign of the Newton correction:

$$\mathbf{c}^{s+1} = \mathbf{c}^s - \eta$$

5. p. 216 l. 2 and l. 5 Change sign

$$T^{-1}AT - T^{-1}T'$$

6. p. 217 l. 3 and l. 8 Change sign in (2,2)-element of matrix, should read

$$\begin{pmatrix} 1 & 0 \\ 0 & 1 + h\lambda \end{pmatrix}$$

7. p. 217 following l. 8 Add line

   or, $\mathbf{y}_n = T_n \begin{pmatrix} \frac{1}{1-h\lambda} & 0 \\ 0 & 1 + h\lambda \end{pmatrix} T_{n-1}^{-1} \mathbf{y}_{n-1}$,

8. *p. 264 l. -3*

$$u_n = q(t_n), \quad (1+\eta)v_n = -(q(t_n) - q(t_{n-1}))/h\,.$$

9. *p. 267 l. -11*

$$x_1' = \left(\alpha - \frac{1}{2-t}\right) x_1 + (2-t)\alpha z + \frac{3-t}{2-t} e^t,$$

The page and line numbers below refer to those of the first printing of the book.

Errata for the first printing

1. *p. 9 l. 9* $\mathcal{D} = \{0 \le t \le b,\ |\mathbf{y}| < \infty\}$
2. *p. 75 l. -10* recall (3.33)
3. *p. 87* The 8th formula should read

$$\mathbf{b}^T ACAC\mathbf{1} = \frac{1}{40},$$

4. *p. 119 l. 17* Remove the word 'again'.
5. *p. 130 l. -13* Replace the phrase 'by the values of the $(k-1)$-step method of the same family' by 'using the exact solution'.
6. *p. 131 line 3 in Table 5.4* Replace '.32e-2' by '.70e-3'.
7. *p. 131 line 4 in Table 5.4* Replace '20.9' by '18.7'.
8. *p. 132 line 2 in Table 5.6* Replace '.13e-6' by '.13e-5'.
9. *p. 143 l. -6* The iteration counter is ν, not s.
10. *p. 171 l. 7, p. 174, l. 7* Replace 'nonseparate' by 'nonseparated'.
11. *p. 197 l. 4* Erase the line

$$\mathbf{0} = \mathbf{g}(\mathbf{y}^{\nu+1}(0), \mathbf{y}^{\nu+1}(b))$$

and replace the following one by

$$\mathbf{0} = \mathbf{g} + \frac{\partial \mathbf{g}}{\partial \mathbf{u}}(\mathbf{y}^{\nu+1}(0) - \mathbf{y}^{\nu}(0)) + \frac{\partial \mathbf{g}}{\partial \mathbf{v}}(\mathbf{y}^{\nu+1}(b) - \mathbf{y}^{\nu}(b)),$$

12. *p. 249 l. 8* Replace v_1' by v_2'.
13. *p. 250 l. 16* Replace the phrase 'because if ... in time' by 'because if $\psi(0) = \epsilon_1$, $\psi'(0) = \epsilon_2$, and $\psi'' = 0$, then $\psi(t) = \epsilon_1 + \epsilon_2 t$; i.e., perturbations grow linearly in time.'
14. *Back cover last sentence* Replace the word 'ordering' by 'ordinary'.