

**ERRATUM for the book *Spectral and High-order Methods with Applications***

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- Page 3: Line 6 from below, change “Chapter 5” to “Section 5”.
- Line 14 on Page 21: “ $S(1, j) = 2$ ” should be changed to “ $S(1, j) = 1$ ”.
- Page 18: In (1.3.14), change “ $\langle T_N, T_N \rangle_{N, \omega}$ ” to “ $(T_N, T_N)_{N, \omega}$ ”.
- Page 21: Line 14, replace “ $s(i, j) = 2$ ” by “ $s(i, j) = 1$ ”.
- Page 22: Replace the relation (1.3.30) by

$$\tilde{u}_k = \gamma_k \sum_{j=0}^N u(x_j) \frac{L_k(x_j)}{L_N^2(x_j)}, \quad k = 0, 1, \dots, N \quad (1.3.30)$$

with  $\gamma_k = \frac{2k+1}{N(N+1)}$  for  $0 \leq k \leq N-1$  and  $\gamma_N = \frac{1}{N+1}$ .

- Page 22: In **Problem 2**, replace “ $L_k + L_{k+1}$ ” by “ $(L_k + L_{k+1})/(x+1)$ ”.
- Page 26: In (1.4.13), replace “ $J_{n-1}^{k,l}(x)$ ” by “ $J_{n-1}^{k+1,l+1}(x)$ ”.
- Pages 36 and 37: In (1.5.15), (1.5.16) and the line above (1.5.15), replace “ $(\cdot, t)$ ” by “ $(\cdot)$ ” where “ $\cdot$ ” represents “ $x$ ” or “ $k$ ” or “ $x_j$ ”.
- Page 42: In (1.6.16), change “ $u_n$ ” to “ $u^n$ ”.
- Page 51: In line 12, remove “n” after “as”.
- Page 74: In (2.1.11d), change “ $(\pm 1)^N$ ” to “ $(\pm 1)^{N+1}$ ” in the first relation.
- Page 78: In the line 3 from below, replace “(1.3.11)” by “(1.3.25)”.
- Page 78: In the last line, replace “ $\frac{1}{N(N+1)L_N(x)}$ ” by “ $\frac{-1}{N(N+1)L_N(x)}$ ”.
- Page 80: In the last line, replace “ $\frac{N}{2}$ ” by “ $\frac{N}{2} - 1$ ” in the upper summation limit.
- Page 81: In the line 10 from below, replace “ $1 \leq j \leq N-1$ ” by “ $0 \leq j \leq N-1$ ”.
- Page 83: In the second line, change “ $\phi_j(x)$ ” to “ $F_j(x)$ ”.
- Page 83: In the Line after (2.2.9b), add “Let  $h = 2\pi/N$ .” before “For  $N$  even”.
- Page 92: In (2.4.1), replace “ $\epsilon$ ” by “ $-\epsilon$ ”.
- Page 96: In CODE PSBVP.3, all  $a_+$  should be changed to  $b_-$ .
- Page 99: In (2.5.1), change “ $v$ ” to “ $u$ ”.
- Page 99: In (2.5.3), change “ $v$ ” to “ $v_N$ ”.
- Page 112: Line 6, replace “ $\psi_k$ ” by “ $\phi_k$ ”.
- Page 112: Line 9, replace “ $(N-2) \times N-2$ ” by “ $(N-1) \times N-1$ ”.
- Page 115: In (3.37), replace “ $c_k \frac{\pi}{2} (1 + a_k^2 + b_k^2)$ ” by “ $\frac{\pi}{2} (c_k + a_k^2 + b_k^2)$ ”.
- Page 122: Lines 4 and 5 from below, change “ $\bar{u} = (u_0, u_1, \dots, u_{N-2})^T$ ” to “ $\bar{u} = (\tilde{u}_0, \tilde{u}_1, \dots, \tilde{u}_{N-2})^T$ ”.
- Page 130: In the line under (3.6.16), change “ $(N-3) \times (N-3)$ ” to “ $(N-2) \times (N-2)$ ”.
- Page 133: In the line 11 from below, change “ $pi$ ” to “ $\pi$ ”.
- Page 135: The equation (3.7.13) should be replaced by

$$a_\omega(v_N, u - \tilde{\Pi}_{N,\omega}^{1,0} u) = \int_{-1}^1 v'_N((u - \tilde{\Pi}_{N,\omega}^{1,0} u)\omega)' dx = 0 \quad \text{for } v_N \in X_N$$

- Page 137: Replace “ $\omega^{m-1/2, m-1/2}$ ” by “ $\omega^{m-3/2, m-3/2}$ ” in (3.7.22).
- Page 137: Replace “ $\omega^{m-1/2, m-1/2}$ ” by
- Page 178: Replace “ $\pi_{N,\alpha}$ ” by “ $\hat{\pi}_{N,\alpha}$ ” in (4.4.8).

- Page 183: In the line 5 from below, change “producinf” to “producing”.
- Page 287: In (7.4.23), add “ $\Pi_{N-2}$ ” after “ $\nu$ ”. And after (7.4.23), add “In the above,  $\Pi_{N-2}$  is the orthogonal projection operator from  $L^2(\Omega)$  to  $P_{N-2}$ .”