Errata
for the book
Wavelets and Multiwavelets
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• Page 8, last paragraph: “... for each fixed $x$ the sum only contains finitely many nonzero terms.”

• Page 12, third equation: The summation index should be $k$.

• Page 19, figure 1.7: The pictures for $Q_0 f$ and $Q_1 f$ are wrong. The corrected images are

• Page 28, example 1.7: The continuous moment $\mu_2$ is wrong. It should be

$$\mu_2 = \frac{6 - 3\sqrt{3}}{2}.$$  

• Page 40, lemma 2.1: The second formula should be

$$\langle \psi_{n-1,j}, \tilde{\phi}_{nk} \rangle = g_{k-2j}.$$  

• Page 40, proof of lemma 2.1: The $\tilde{\phi}$ in the two integrals should have a * (for complex conjugate) attached.

• Page 64, third equation: There should be extra subscripts on the $h_j$ to indicate to which scaling function they belong. The corrected equation is

$$f(y, z) = \sqrt{2} \sum_{jkl} h_{1,j} h_{2,j-k} h_{3,j-l} f(2y - k, 2z - l).$$
• Page 71, example 3.2: The second equation should read
\[ \tilde{h}_0 + \tilde{h}_1 = \sqrt{2}. \]

• Page 77, example 3.3: The equation for \( h_0 \) has the wrong sign. It should read
\[ h_0(z) = \frac{1 - \sqrt{3}}{2} (z - (2 + \sqrt{3})). \]

• Page 95, last formula for \( Tf \): the summation indices \( j, k \) are interchanged.

• Page 109, theorem 5.19. The conclusion should read “… then \( \phi \) and \( \tilde{\phi} \) are biorthogonal.”

• Page 177, center: in the paragraph text, the closing absolute value bar is missing in \( |\phi(\xi)| < \epsilon \).

• page 124, last line: the arguments in the second set of brackets should be \( 2x - 1 \), not \( 2x + 1 \).

• page 128/129, formulas (6.7), (6.8): replace
\[ |H(\xi + \frac{2\pi n}{m})|^2 \]
by
\[ H(\xi + \frac{2\pi n}{m})H(\xi + \frac{2\pi n}{m})^*. \]

• Page 129, second formula: replace \( \ell \in \mathbb{N} \) by \( \ell \in \mathbb{Z} \).

• Page 130, middle: “… support strictly contained in the interval \([k_0/(m - 1), k_1/(m - 1)]\).”

• Page 131, first paragraph: “… for each fixed \( x \) the sum only contains finitely many nonzero terms.”

• page 137, formula (6.16): replace
\[ H(\xi)\tilde{H}(\xi)^* + H(\xi + \pi)H(\xi + \pi)^* = I. \]
by
\[ \sum_{n=0}^{m-1} H(\xi + \frac{2\pi n}{m})\tilde{H}(\xi + \frac{2\pi n}{m})^* = I. \]

• Page 139, eq. (6.17): tildes are missing on the third line. This line should read
\[ \sum H_k\tilde{G}^{(s)}_{k-m\ell} = \sum G^{(s)}_k \tilde{H}^*_{k-m\ell} = 0, \]

• Page 140, definition 6.18: the exponent in both formulas should be \( k \), not \( n \).
• Page 142, example 6.4: \( \mu_1 \) is wrong. It should be
\[
\mu_1 = \frac{1}{6} \left( \sqrt{6} \right) - \frac{1}{2\sqrt{3}}.
\]

• Page 154, lemma 7.1: The second formula should be
\[
\langle \psi^{(t)}_{n-1,j}, \tilde{\phi}_{nk} \rangle = G^{(t)}_{k-mj}.
\]

• Page 167, last two formulas: replace the summation index \( t \) by \( \ell \), since \( t \) is already used as a superscript.

• Page 170, algorithm 7.11, decomposition formula: range of \( t \) should be \( t = 1, \ldots, m-1 \).

• Page 206: The formula for \( \tilde{G}^{(j)}_{\text{new}}(z) \) is missing a *. It should read
\[
\tilde{G}^{(j)}_{\text{new}}(z) = \tilde{G}^{(j)}(z) - \sum_{j=1}^{m-1} L^{(j)}(z^m) \ast \tilde{G}^{(j)}(z).
\]

• Page 231, Definition 11.14: Replace “Assume we are given \( H(\xi) \) with \( H(0) = 1 \)” by “Assume we are given \( H(\xi) \) with \( H(0) \) satisfying condition E”.

• Page 231, Theorem 11.15: Replace “Assume that \( H \) satisfies condition E” with “Assume that \( H(0) \) satisfies condition E”.

• Page 244, \( \text{HM}(s) \) wavelet:

It is stated that the parameter \( s \) must satisfy \(-1 < s < 1/7\), and that for \( s = 1/4 \), \( V_0 \) consists of continuous, piecewise quadratic splines with integer knots. That value is outside the given range.

The wording should be amended as follows: For \(-1 < s < 1/7\), both \( \phi \) and \( \tilde{\phi} \) are continuous functions. For \( s = 1/4 \), the given \( V_0 \) is correct, but \( \tilde{\phi} \) is a distribution, not a function.

• Page 249, translation formula: exponential term on the right should be \( e^{-ia\xi} \).

• Page 252, definition B.4: \( a_{21}, a_{31} \) should be \( a_{12}, a_{13} \).