Statistical and Adaptive Signal Processing
Errata List – February 2001

TOC

Page xiii: Section 7.7 last line replace “... Toeplitz Matrice” by “... Toeplitz Matrices”.

Chapter 1

Page 25: In Figure 1.23 remove two arrows in the antenna beam (cloud-like) shape.

Chapter 2

Page 37: In equations (2.2.2), (2.2.3), and (2.2.4) replace “dt” by “\( d \)” (i.e., d should be roman).

Page 38: In equation (2.2.5) replace “dt” by “\( d \)” (i.e., d should be roman).

Page 38: In equations (2.2.6) and (2.2.7) replace “\( dF \)” by “\( dF \)” (i.e., d should be roman).

Page 39: In equations (2.2.13), (2.2.15), and (2.2.16) replace “\( d\omega \)” by “\( d\omega \)” (i.e., d should be roman).

Page 40: In equation (2.2.20) replace “dt” by “\( dt \)” (i.e., d should be roman).

Page 43: In equation (2.2.30) replace “\( dz \)” by “\( dz \)” (i.e., d should be roman).

Page 43: In equation (2.2.33) replace “\( d\omega \)” by “\( d\omega \)” (i.e., d should be roman).

Page 44: In Table 2.1 row ‘Differentiation’ column ‘\( z \)-Domain’ replace “\( \frac{dX(z)}{dz} \)” by “\( \frac{dX(z)}{dz} \)” (i.e., d should be roman).

Page 44: In Table 2.1 row ‘Multiplication’ column ‘\( z \)-Domain’ replace “\( dv \)” by “\( dv \)” (i.e., d should be roman).

Page 44: In Table 2.1 row “Parseval’s Relation” column ‘\( z \)-Domain’ replace “\( dv \)” by “\( dv \)” (i.e., d should be roman).

Page 49: In equation (2.3.11) replace “\( \frac{d}{d\omega} \)” by “\( \frac{d}{d\omega} \)” (i.e., d should be roman).

Page 66: In equation (2.5.17) replace “\( a_k^{(m)} \)” by “\( a_l^{(m)} \)”.

Page 66: In equation (2.5.19) replace “\( b_k^{(m)} \)” by “\( b_l^{(m)} \)”.

Page 66: In equation (2.5.22) replace “\( a_1^{(m)} z^{-1} \)” by “\( a_1^{(m)} z^{-(m-1)} \)”.
Chapter 3

Page 76: In equation (3.1.1) replace “<” by “≤”.

Page 79: In equation (3.1.16) replace “\(r_{x}^{(n-k)}\)” by “\(r_{x}^{(m-k)}\)”.

Page 87: In equation (3.2.29) replace “\(R_x\)” by “\(R_{xy}\)”.

Page 113: In equation (3.3.60) replace “\(R_x(\omega)\)” by “\(R_x(e^{j\omega})\)”.

Page 146: In Problem 3.26 the first line should be
“Consider the process \(x(n) = a x(n - 1) + w(n)\), where \(w(n) \sim \text{WN}(0, \sigma^2_w)\)” (i.e., replace “\(\mu\)” by “\(n\)”).

Page 146: In Problem 3.28 the second line should be
“\(x(n) = w(n) + \cdots\)” (i.e., change “\(\mu\)” should be “\(n\)”).

Page 147: In Problem 3.30 part (b) in the line following equation (P.4) the summation limits \(\sum_{l=0}^{N}\) should be “\(\sum_{l=1}^{N}\)”.

Chapter 4

Page 157: In equation (4.2.7) replace “\(n > 0\)” by “\(1 \leq n \leq P\)”.

Page 171: In equation (4.2.102) replace “\(k_1 < \frac{4k_2}{(1 + k_2)^2}\)” by “\(k_1^2 < \frac{4k_2}{(1 + k_2)^2}\)”.

Page 171: The equation (4.2.103) should be
\[
\det \begin{bmatrix}
1 & \rho(1) \\
\rho(1) & 1
\end{bmatrix} > 0 \\
\det \begin{bmatrix}
1 & \rho(1) & \rho(2) \\
\rho(1) & 1 & \rho(1) \\
\rho(2) & \rho(1) & 1
\end{bmatrix} > 0
\]

Page 174: The first line of the last paragraph should read “The first lattice parameter of the AZ(1) model is \(k_1 = -\rho(1) \ldots\)”.

Page 175: In Figures 4.9 and 4.10 the y-labels of the plots titled “ACS” should be “\(\rho(l)\)” instead of “\(r(l)\)”.

Page 177: The equation (4.4.4) should be
\[
R_h(z) = H(z) H^*(\frac{1}{z^*}) = \frac{D(z) D^*(1/z^*)}{A(z) A^*(1/z^*)} \triangleq \frac{R_d(z)}{R_a(z)}
\]

Page 178: The equation (4.4.5) should be
\[
A(z) R_h(z) = D(z) H^*(\frac{1}{z^*})
\]
Page 178: In the line following equation (4.4.5) replace “$H(1/z^*)$” by “$H^*(1/z^*)$”.

Page 178: The equation (4.4.8) should be

$$
\begin{bmatrix}
  r_h(Q) & r_h(Q - 1) & \cdots & r_h(Q + P - 1) \\
  r_h(Q + 1) & r_h(Q) & \cdots & r_h(Q - P + 2) \\
  \vdots & \vdots & \ddots & \vdots \\
  r_h(Q + P - 1) & r_h(Q + P - 2) & \cdots & r_h(Q)
\end{bmatrix}
\begin{bmatrix}
a_1 \\
a_2 \\
\vdots \\
a_P
\end{bmatrix}
= -
\begin{bmatrix}
r_h(Q + 1) \\
r_h(Q + 2) \\
\vdots \\
r_h(Q + P)
\end{bmatrix}
$$

Page 178: The equation (4.4.11) should be

$$
r_a(l) = \sum_{k=k_1}^{k=k_2} a_k a_k^*_{k+|l|} - P \leq l \leq P,
\quad k_1 = \begin{cases} 0, & l \geq 0 \\ -l, & l < 0 \end{cases},
\quad k_2 = \begin{cases} P - l, & l \geq 0 \\ P, & l < 0 \end{cases}
$$

Page 178: In the third line following equation (4.4.12) replace “$D(1/z^*)$” by “$D^*(1/z^*)$”.

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Chapter 5

Page 196: In Figure 5.1 replace “Haromonic” by “Harmonic”.

Page 212: In the line above equation (5.3.1) replace “(3.3.44)” by “(3.3.39)”.

Page 213: In the last line of equation (5.3.8) replace “$x(N - 1 - m)$” by “$x(N - m)$”.

Page 214: On the second line replace “$n = N - 1$” by “$n = N$”.

Page 214: In equation (5.3.12) replace “$y_k(N - 1)$” by “$y_k(N)$”.

Page 214: In the first line following equation (5.3.13) replace “$H(e^{j\omega})$” by “$H_k(e^{j\omega})$”.

Page 214: In the second line following equation (5.3.13) replace “$y_k(N - 1)$” by “$y_k(N)$”.

Page 215: In the second line replace “$(N - 1)st$” by “$Nth$”.

Page 215: In Figure 5.11 replace every instance of “$N - 1$” by “$N$” and every instance of “$1/N$” by “$N$”.

Page 216: In equation (5.3.14) replace “$\hat{r}_x(l)$” by “$\hat{r}_v(l)$”.

Page 232: In the fourth line replace “... larger than $N$ ...” by “... larger than $L$ ...”

Page 251: In Example 5.5.2 replace “Consider the wire gage wave data of Figure 5.34.” by “Consider the wire gage wave data of Figure 5.24.”

Page 256: In Problem 5.6, (b) should read “... where $W_R(e^{j\omega})$ is the DTFT ...”
Page 258: In Problem 5.14,

\[ \hat{R}_x^{(PA)}(k) = \frac{1}{KL} \sum_{i=0}^{K-1} |X_i(e^{j\omega})|^2 \]

should be

\[ \hat{R}_x^{(PA)}(k) = \frac{1}{KL} \sum_{i=0}^{K-1} |X_i(k)|^2 \]

Page 258: In Problem 5.17 part (b) replace “\(e^{j(M-1)\omega}\)” by “\(e^{j(L-1)\omega}\).”

Page 258: In Problem 5.17 part (b) equation (P.6) replace “... = \(u^H\) ...” by “... = \(\frac{1}{L} u^H\) ...”.

Page 258: In Problem 5.17 part (c) equation (P.7) replace “... = \(\frac{1}{K}\) ...” by “... = \(\frac{1}{KL}\) ...”.

Page 259: In Problem 5.18 third bullet replace two instances of “\(w_a(n)\)” by “\(w_a(l)\)”.

Page 259: In Problem 5.20 part (b) replace “... real-valued white Gaussian process ...” by “... real-valued, zero-mean white Gaussian process ...”.

Page 260: In Problem 5.23, add the sentence “Let \(v(n)\) be WN(0, 1).” after “... 0 \(\leq n \leq 256\).”

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Chapter 6

Page 275: In the first line following equation (6.3.7) replace “\(r_{ij} = r_{ji}\)” by “\(r_{ij} = r_{ji}^*\).”

Page 277: In the second line following equation (6.3.17) replace “... matrix as follows.” by “... matrix.” and “... consider now the ...” by “... consider the ...”.

Page 279: In the footnote replace “\(c_k(n) \overset{\triangle}{=} h^*(n, k)\)” by “\(c_{k+1}(n) \overset{\triangle}{=} h^*(n, k), 0 \leq k \leq M - 1\)”. 

Page 281: In equation (6.4.14) replace all instances of “\(r_{yx}\)” by “\(r_{yx}^*\)”.

Page 281: In the two lines following equation (6.4.15) replace two instances of “\(c_{o,n}^*\)” by “\(c_{o,n+1}^*\)”.

Page 282: In Table 6.2 row-5 column-2 replace “\(|y(n)|^2\)” by “\(E |y(n)|^2\)”.

Page 288: In the line following equation (6.5.6) replace “\(i, j = 1, 2\)” by “\(j, k = 1, 2\)”.

Page 288: Replace equation (6.5.7) by

\[ R_{jk}(n) \overset{\triangle}{=} E \{ x_j(n)x_k^H(n) \} \]

Page 288: In the second-last line before Section 6.5.2 replace “[ci,pi]=lsigest(R,i)” by “[ci,pi]=olsigest(R,i)”.
Page 289: In the third line following Table 6.3 replace “... the signal estimation ...” by “... signal estimation ...”.

Page 290: In Table 6.4 fourth row under column ‘FLP’ replace “... = x(n) − aH ...” by “... = x(n) + aH ...”.

Page 290: In Table 6.4 fourth row under column ‘BLP’ replace “... = x(n − M) − bH ...” by “... = x(n − M) + bH ...”.

Page 290: In Table 6.4 fifth row under column ‘Optimum filter’ replace “... = x(n − M) − bH ...” by “... = x(n − M) + bH ...”.

Page 296: In the second line following equation (6.6.3) replace “... between x(n) and desired response process y(n).” by “... between y(n) and desired response process x(n).”.

Page 298: In Figure 6.18 replace the text “Optimum filter for white output” under the second box by “Optimum filter for white input”.

Page 303: In the line following equation (6.6.57) replace “... Figure 6.20.” by “... Figure 6.20 (Problem 6.22).”.

Page 316: In the fourth line after equation (6.8.26) replace “... Chapter 9.” by “... Chapter 10.”

Page 322: In the second line following the displayed equation

$$c^H R c = c^H Q \Lambda Q^H c = ...$$

replace “$\tilde{c}_2 = \cos \phi / \sqrt{\lambda_2}$” by “$\tilde{c}_2 = \sin \phi / \sqrt{\lambda_2}$”.

Page 327: In Problem 6.14 part (b) last line replace “$\tilde{R}_i (n)$” by “$\tilde{r}_i (n)$”.

Page 328: In Problem 6.23 second line replace “$|h_x (n)|^2$” by “$|h_x (n)|^2$”.

Page 328: In Problem 6.29 second line replace “Generate K sample ...” by “Generate K = 100 sample ...”.

Page 329: In Problem 6.29 part (b) displayed equation replace “$\tilde{x}_k^b$” by “$\tilde{x}_k^b$”, that is, roman ‘b’.

Page 329: In Problem 6.30 displayed equation replace “$h(k)$” by “$c_k^s$”.

Page 330: In Problem 6.37 table replace “$\frac{1 - \rho^2}{1 + \rho^2}$” by “$\frac{1 + \rho^2}{1 - \rho^2}$”.

Chapter 7

Page 347: In equation (7.3.5) replace “$x^*(n − m) t$” by “$x^*(n − m)$”.

Page 356: Replace equation (7.4.19) by

$$P_m = \frac{\det R_{m+1}}{\det R_m} \quad \text{and} \quad \det R_m = \prod_{i=0}^{m-1} P_i \quad \text{with} \quad P_0 = r(0)$$
Page 356: Add to equation (7.4.21)

\[ P_{m+1} = ... = P_m (1 - |k_m|^2) \]

Page 357: In the solution part of Example 7.4.2 first displayed equation replace “\( k_1 = \frac{\beta_0}{P_0} \)” by “\( k_0 = \frac{\beta_0}{P_0} \)”.

Page 361: In equation (7.5.2) replace “\( x(n + 1 - k) \)” by “\( x(n - k) \)”.

Page 366: In Figure 7.7 lower left and right circles replace “\( P_0, a_1, \ldots, a_M \)” by “\( P_M, a_1, \ldots, a_M \)”.

Page 366: In the line following (7.5.28) replace “\( [k, P0] = \text{stepup}(k, PM) \)” by “\( [k] = \text{stepup}(k) \)”.

Page 366: In equation (7.5.29) replace “\( k_m \)” by “\( k_{m-1} \)”.

Page 366: In the line following (7.5.31), \( 1 \leq m \leq M \) should be \( 0 \leq m \leq M - 1 \).

Page 366: In the line following (7.5.28) replace “[\( k, P0 \)] = \text{stepdown}(a, PM)” by “[\( k \)] = \text{stepdown}(a)”.

Page 367: In the line following (7.5.33) replace “\( i = 1, 2, \ldots, m \)” by “\( i = 1, 2, \ldots, m - 1 \)”.

Page 368: In the line prior to equation (7.6.6) replace “(see Problem 7.30)” by “(see Problem 7.29)”.

Page 371: In the second-last line of bullet 3 replace “\( k_4 \)” by “\( k_3 \)”.

Page 372: In Table 7.4, 2 (a) should be “\( l = 0, 1, \ldots, M \)” instead of “\( n = 0, 1, \ldots, M \)”.

Page 372: In Table 7.4, 3 (b) should be “\( k_m = -\frac{\xi^f_m(m + 1)}{\xi^b_m(m)} \)” instead of “\( k_m = -\frac{\xi^f_m(m)}{\xi^b_m(m)} \)”.

Page 378: Equation (7.7.22) should be

\[ \langle Q \rangle_{ij} = \langle R^{-1} \rangle_{ij} + P q_i q_j = \langle R^{-1} \rangle_{M-j,M-i} + P q_i q_j \]

Page 378: Equation (7.7.23) should be

\[ \langle R^{-1} \rangle_{M-j,M-i} = \langle Q \rangle_{M-j,M-i} - P q_{M-j} q_{M-i} \]

Page 378: Equation (7.7.23) should be

\[ \langle Q \rangle_{ij} = \langle Q \rangle_{M-j,M-i} + P \left( q_i q_j - q_{M-j} q_{M-i} \right) \]

Page 389: In Problem 7.1 the second matrix should be

\[
\begin{bmatrix}
1_m & -R_m^{-1}r_m \\
0_m & 1
\end{bmatrix}
\]

Page 390: In Problem 7.10 part (c) replace “Example 6.3.1” by “Example 6.3.2”.

Page 390: In Problem 7.13 replace “\( k_1 \)”, “\( k_2 \)”, and “\( k_3 \)” by “\( k_0 \)”, “\( k_1 \)”, and “\( k_2 \)”, respectively.
January 2001

Errata List

Page 391: In Problem 7.20 replace “k1”, “k2”, and “k3” by “k0”, “k1”, and “k2”, respectively.

Page 391: In Problem 7.23 replace “k1”, “k2”, and “k3” by “k0”, “k1”, and “k2”, respectively.

Page 391: In Problem 7.25 replace “k1”, “k2”, and “k3” by “k0”, “k1”, and “k2”, respectively.

Page 392: In Problem 7.37 replace “x(n)”, “x(n-2)” by “x(n)”, and “x(n-M)” by “x(n-M+1)”.

Page 392: In Problem 7.37 second line replace “k ≥ 1” by “D ≥ 1”.

Page 393: In Problem 7.42 replace “PDF” by “PSD”.

Page 394: In Problem 7.45 part (b) replace
\[ y_p(-1) = 0 \quad y_v(-1) = 1 \]
by
\[ y_p(-1) = 0 \quad y_v(-1) = 1 \quad y_a(-1) = 0 \]

Chapter 8

Page 401: In Figure 8.4 box containing ’Power domain:’ replace “(X^H X) c_l = X^H y” by “(X^H X) c_l = X^H y”.

Page 410: In Example 8.3.2 replace “H(z) = \frac{1}{1 - \alpha z^{-1}} - h(n) = \alpha^n u(n)” by “H(z) = \frac{1}{1 - \alpha z^{-1}} \Rightarrow h(n) = \alpha^n u(n)”.

Page 431: In the last line replace “... different orthogonal matrices.” by “... different unitary matrices.”.

Page 434: In the second last paragraph above Section 8.7.2 last line delete “and should be avoided”.

Page 443: In Problem 8.29 displayed equation replace “[x(n-k) + x(n-k)]” by “[x(n-k) + x(n+k)]”.

Page 443: In Problem 8.30 part (a) second line replace “x(n) ∼ WGN(0, 1)” by “y(n) ∼ WGN(0, 1)”.

Chapter 9

Page 449: In Section 9.2.1 replace “Consider the AR(P0) model” by “Consider the AR(P0) model where we use \( a_k^* \) instead of \( a_k \) to comply with Chapter 8 notation”.

Page 460: In equation (9.2.35) replace “\( \frac{2k_{m-1}^{FM}k_{m-1}^{BM}}{k_{m-1}^{FM} + k_{m-1}^{BM}} \)” by “\( \frac{2k_{m-1}^{FP}k_{m-1}^{BP}}{k_{m-1}^{FP} + k_{m-1}^{BP}} \)”.

Page 460: In the third line following equation (9.2.35) replace “[see (9.2.11)]” by “[see (9.2.16)]”. 
Page 460: Replace equation (9.2.38) by
\[ \hat{\sigma}_{m}^{2} = \frac{1}{2} \frac{\mathcal{E}_{m}}{N - m} \]

Page 460: In Table 9.1 line 2b replace “\(E^f_0\)” by “\(\mathcal{E}^f_0\)” and “\(E^b_0\)” by “\(\mathcal{E}^b_0\)”.

Page 460: In Table 9.1 line 2c replace “\(k^\text{FP}_1\)” by “\(k^\text{FP}_0\)” and “\(k^\text{BP}_1\)” by “\(k^\text{BP}_0\)”.

Page 460: In Table 9.1 line 2d replace all subscripts from 1 to 0.

Page 460: In Table 9.1 line 2e replace “\(k^\text{IS}_1\)” by “\(k^\text{IS}_0\)” and “\(k^B_1\)” by “\(k^B_0\)”.

Page 460: In Table 9.1 line 3 replace “\(M\)” by “\(P\)”.

Page 460: In Table 9.1 line 3a replace “\(E^f_{m-1}\)” by “\(\mathcal{E}^f_{m-1}\)” and “\(E^b_{m-1}\)” by “\(\mathcal{E}^b_{m-1}\)”.

Page 460: In Table 9.1 line 3b replace “\(k^\text{FP}_m\)” by “\(k^\text{FP}_{m-1}\)” and “\(k^\text{BP}_m\)” by “\(k^\text{BP}_{m-1}\)”.

Page 460: In Table 9.1 line 3c replace all subscripts from “\(m\)” to “\(m - 1\)”.

Page 460: In Table 9.1 line 3d replace “\(k^\text{IS}_m\)” by “\(k^\text{IS}_{m-1}\)” and “\(k^B_m\)” by “\(k^B_{m-1}\)”.

Page 460: In Table 9.1 line 4 replace “\(M\)” by “\(P\)”.

Page 460: In Section 9.2.4 line 4 replace “\(|X(e^{-j\omega m})|\)” by “\(|X(e^{-j\omega m})|^2\)”.

Page 463: In Section 9.3.2 line 2 replace “(9.3.5)” by “(9.3.3)”.

Page 473: Equation (9.5.1) Should be
\[ |H(e^{j2\pi f})|^2 = \begin{cases} \frac{1}{\Delta f} & |f - f_k| \leq \frac{\Delta f}{2} \\ 0 & \text{otherwise} \end{cases} \]

Page 473: In equation (9.5.8) replace “\(\frac{1}{M}\)” by “\(M\)”.

Page 473: In equation (9.5.9) replace “\(\frac{1}{\sqrt{M}}\)” by “\(\sqrt{M}\)”.

Page 474: In the first line replace “\(1/\sqrt{M}\)” by “\(\sqrt{M}\)”.

Page 474: In the paragraph following the paragraph containing equation (9.5.13) line 5 replace “Therefore, we might compute the upper triangular factor of the data matrix \(R_x\) by using ...” by “Therefore, we might compute the upper triangular factor \(R_x\) of the data matrix by using ...”.

Page 474: In equation (9.5.15) insert “\(\frac{1}{N - M + 1}\)” after the “\(=\)” sign.

Page 474: In the footnote replace “\(N - M + 1\)” by “\(N - M + 1\)”.

Page 477: In equation (9.5.17) replace three instances of “\((M-1)\)” by “\((M)\)”, two instances of “\((M-2)\)” by “\((M-1)\)”, and one instance of “\((1)\)” by “\((2)\)”.
Page 477: Replace equation (9.5.19) by
\[ \mathbf{a}_m = [1 \ a_1^{(m)} \ a_2^{(m)} \ \cdots \ a_m^{(m)}]^T \]

Page 486: In equation (9.6.36) replace “u(k)” by “u(k+1)” and replace “\((1 - e^{j2\pi f_k})\)” by “\((1 - e^{j2\pi f_k z^{-1}})\)”.

Page 489: In Figure 9.24 replace the right-most text “\(\hat{f}_p = \frac{\phi_p}{2\pi}\)” by “\(\hat{f}_p = \frac{\phi_p}{2\pi}\)”, that is, \(\pi\) should not be in the superscript.

Page 490: Equation (9.6.49) should be
\[ V_1 = V_{m-1} \Phi^n \quad \text{and} \quad V_2 = V_{m-1} \Phi^{n+1} \]

Page 491: In the second line after equation (9.6.52) replace “\(\mathbf{V}^H \mathbf{V} = \mathbf{I}\)” by “\(\mathbf{L}^H \mathbf{L} = \mathbf{I}\)”.

Page 493: In the Example 9.6.4 the last Matlab script line should be
\[ \text{fhat} = \text{angle(diag(phi))}/(2*\pi); \quad \% \text{frequency estimates} \]

Page 495: In Problem 9.3 displayed equation should be
\[ H(z) = \frac{1}{1 - 0.9 z^{-1} + 0.81 z^{-2}} \]

Page 495: In Problem 9.3 second line under the displayed equation replace “\(k_m^\text{FM}\)” by “\(k_m^\text{FP}\)” and “\(k_m^\text{BM}\)” by “\(k_m^\text{BP}\)”.

Page 496: In Problem 9.6 part (c) replace “Now assume that PZ(1,1) is an appropriate model for \(x(n)\).” by “Now repeat (b) assuming that AP(4) is an appropriate model for \(x(n)\).”

Page 498: In Problem 9.28 replace “MUSIC pseudospectrum. What are the implications of this relationship?” by “all-pole model spectrum in the case of an infinite signal-to-noise ratio.”

Chapter 10

Page 525: In Figure 10.17 (b) remove the small shadow under \(\tilde{c}_x(n - 1)\).

Page 526: In Figure 10.18 add arrow to the third multiplier (from left) on the left-side, that is, \(\rightarrow \otimes\).

Page 528: In the second-last paragraph third line replace “independent” by “independence”.

Page 554: In Section ‘Initialization’ second paragraph fourth line replace “\(\delta \mathbf{I} + \mathbf{\hat{R}}(n)\)” by “\(\delta \mathbf{\hat{\lambda}} \mathbf{I} + \mathbf{\hat{R}}(n)\)”.

Page 554: In equation (10.5.36) replace “\(\lambda^{n+1}\)” by “\(\lambda^n\)”.

Page 562: In the displayed equation after equation (10.6.25) delete “\(\mathbf{\hat{R}}(n) = \)”.

Page 573: In equation (10.7.3) replace “\(\mathbf{x}_{m+1}(n)\mathbf{x}_{m+1}^H(n)\)” by “\(\mathbf{x}_{m+1}(j)\mathbf{x}_{m+1}^H(j)\)”.

Page 582: In Table 10.15 line (i) replace “\(|a_m(n)e_m^h(n)|^2\)” by “\(|e_m^h(n)|^2\)”. 
January 2001  Errata List  10

Page 609: In Problem 10.4 part (a) the Matlab function should be
[c,e] = lplms(x,y,mu,M,c0).
Also in the last line of part (a) replace “vector a0” by “vector c0”.

Page 609: In Problem 10.5 first line replace “Figure 10.25” by “Figure 10.23”.

Page 610: In Problem 10.7 part (a) replace “NLMS” by “sign-error LMS”.

Page 611: In Problem 10.3 third line from bottom replace “... is the ...” by “... provides ...”.

Page 611: In Problem 10.15 part (a) replace “filter of order” by “filter of length”.

Page 613: In Problem 10.19(a) replace \( \frac{\partial P_{fbm}}{\partial k_m} \) by \( \frac{\partial P_{fbm}}{\partial k_{m-1}} \).

Page 613: In Problem 10.19(b) replace “Derive the updating formula” by “Derive the updating formula using the LMS-type approach”.

Page 613: In Problem 10.19(b) replace “\( k_m(n) = k_m(n-1) + 2\mu(n) \)” by “\( k_m(n) = k_m(n-1) - 2\mu(n) \)” and replace two instances of “\( E_{m-1}^b \)” by “\( E_{m-1} \)”.

Page 613: In Problem 10.20 part (b) delete “(see Problem 2.31)”.

Page 613: In Problem 10.20(d) last line replace “... experiment ...” by “... experimenting ...”.

Page 614: In problem 10.26 replace “... 7.5.1 ...” by “... 7.1.5 ...”.

Page 615: In Problem 10.32 delete “, and check its validity by using it to initialize the FAEST algorithm, as in Problem 10.31”.

Page 618: In Problem 10.48 part (c) first line replace “(f), (d)” by “(d), (f)”.

Page 618: Problem 10.49 should read as “Show that the LMS algorithm in Table 10.13 satisfies the multiprocessing architecture in Figure 10.56.”

Chapter 11

Page 634: In equation (11.2.15) second line replace “...s(n)^T + ...” by “...s(n)^T + ...”.

Page 653: In the first line following equation (11.4.1) replace “reponse.” by “response.”.

Page 686: In Problem 11.2 second line replace “M = 20 elements.” by “M = 20 \( \lambda/2 \)-spaced elements.”.

Page 687: In Problem 11.4 second line replace “\( \phi = 1.5^\circ \)” by “\( \phi = 3^\circ \)”.

Page 687: In Problem 11.5 first line replace “invesigate” by ”investigate”.

Page 687: In Problem 11.6 add “The noise has equal power for all elements.” at the end of the problem.

Page 688: In Problem 11.12 third line replace “30 dB” by “20 dB”.

Page 689: In the second displayed equation from the top replace “\( \sigma_i^2 \)” by “\( \sigma_i \)”.
Page 690: In Problem 11.21 replace part (a) by “(a) Compute and plot the SINR loss for the optimum beamformer for \(-90^\circ \leq \phi \leq 90^\circ \).”

Chapter 12

Page 692: In equation (12.1.10) replace “\(m_x^{(k)}\)” by “\(\mu_x^{(k)}\)” and “\(m_g^{(k)}\)” by “\(\mu_g^{(k)}\).”

Page 693: In equation (12.1.17) replace “… \(e^{-j(\omega_1 l_1 + \omega_2 l_2)}\)” by “… \(e^{-j(\omega_1 l_1 + \omega_2 l_2)}\), that is, same font size in the exponent.

Page 695: In the line after equation (12.1.33) replace “… white noise process.” by “… white noise process and \(H(z)\) is minimum phase.”.

Page 731: In the paragraph above equation (12.6.22) line 11 replace “… subcube side…” by “… subcube edge…”.

Appendix B

Page 747: Section B.1 second line replace “… vector \(\mathbf{x}\) as a row vector” by “… vector \(\mathbf{x}\) as a column vector”.

Page 747: In equation (B.1) replace “… \[ \frac{\partial g(\mathbf{x})}{\partial x_1} \quad \frac{\partial g(\mathbf{x})}{\partial x_2} \quad \cdots \quad \frac{\partial g(\mathbf{x})}{\partial x_N} \]” by

\[
\frac{\partial g(\mathbf{x})}{\partial \mathbf{x}} = \begin{bmatrix} \frac{\partial g_1(\mathbf{x})}{\partial x_1} & \frac{\partial g_1(\mathbf{x})}{\partial x_2} & \cdots & \frac{\partial g_1(\mathbf{x})}{\partial x_N} \\ \frac{\partial g_2(\mathbf{x})}{\partial x_1} & \frac{\partial g_2(\mathbf{x})}{\partial x_2} & \cdots & \frac{\partial g_2(\mathbf{x})}{\partial x_N} \\ \vdots & \vdots & \ddots & \vdots \\ \frac{\partial g_M(\mathbf{x})}{\partial x_1} & \frac{\partial g_M(\mathbf{x})}{\partial x_2} & \cdots & \frac{\partial g_M(\mathbf{x})}{\partial x_N} \end{bmatrix}^T.
\]

Page 747: In the line following equation (B.1) replace “… extends naturally to …” by “… extends to …”.

Page 747: The equation (B.2) should be

\[
\nabla_{\mathbf{x}} g = \frac{\partial g(\mathbf{x})}{\partial \mathbf{x}} = \begin{bmatrix} \frac{\partial g_1(\mathbf{x})}{\partial x_1} & \frac{\partial g_1(\mathbf{x})}{\partial x_2} & \cdots & \frac{\partial g_1(\mathbf{x})}{\partial x_N} \\ \frac{\partial g_2(\mathbf{x})}{\partial x_1} & \frac{\partial g_2(\mathbf{x})}{\partial x_2} & \cdots & \frac{\partial g_2(\mathbf{x})}{\partial x_N} \\ \vdots & \vdots & \ddots & \vdots \\ \frac{\partial g_M(\mathbf{x})}{\partial x_1} & \frac{\partial g_M(\mathbf{x})}{\partial x_2} & \cdots & \frac{\partial g_M(\mathbf{x})}{\partial x_N} \end{bmatrix}.
\]
Page 747: In the first line following equation (B.2) replace “$M \times N$” by “$N \times M$”.

Page 747: In equation (B.4) replace “… = y^T A” by “… = A^T y”.

Page 747: In equation (B.5) replace “… = y^T A^T” by “… = A y”.

Page 747: In equation (B.6) replace “… = x^T (A + A^T)” by “… = (A + A^T)x”.

Page 748: In equation (B.9) replace “$|z^2|$” by “$|z|^2$”.

Appendix C

Page 753: In Table C.1 under function chol, replace “(Book toolbox)” by “(Matlab)” in the function description.