# Corrections to
# "Introduction to Spectral Analysis" by Stoica and Moses

**Corrections to the first printing:**

- The book' web site should be changed to "`www.prenhall.com/stoica`" throughout the text (pp. xii, 77, 83, 134, 137, 178, 180, 217, 252, 254).
- Title page: change "Upsala" to "Uppsala" under Petre Stoica's name
- p. 18, Exercise 1.9, part c): change $\phi_y(\omega) = \sigma^2|H_1(\omega) + H_2(\omega)|^2$ to $\phi_y(\omega) = \sigma^2|H_1(\omega) \pm H_2(\omega)|^2$
- p. 50, equation (2.6.32): Change "The windowed periodogram" to "For large $N$, the windowed periodogram"
- p. 69–70, Exercise 2.2: replace $\tilde{r}(k)$ by $\hat{r}(k)$ in the problem statement and in equation (2.9.6).
- p. 76, equation (2.9.17): add the third condition, 3) $w(0) = 1$.
- p. 78, third to last line in Exercise C2.17: change "four" to "five".
- p. 80, Exercise C2.19, part (b), fourth line: change "widths of" to "distance between".
- p.81, line 4: change "overlayed" to "overlaid".
- p. 81, last line in first paragraph: change (a) to (b).
- p. 81, Exercise C2.19, part (d), first sentence: change "Bartlett window" to "Bartlett window main lobe".
- p. 81, Exercise C2.19, part (e): remove "50" from line 2. Change "spectral estimates for most realizations" to "averaged spectral estimate" in line 5.
- p. 126–127, Exercise 3.1:
  - change the problem statement to "$A(z) = 1 + a_1 z^{-1} + \cdots + a_n z^{-n}$ *is real and* has all its zeroes inside the unit circle, and $B(z)$ is any other *real* polynomial ..."
  - remove the term $\frac{1-\alpha}{1-\alpha^*}$ from equation (3.10.1).
  - replace parts (b)–(d) to:

    (b) Show that
    $$-\arg E(\omega) = \omega + 2\tan^{-1}\left[\frac{r\sin(\omega-\theta)}{1-r\cos(\omega-\theta)}\right]$$
    Also, show that the above function is increasing.

(c) If $\alpha$ is real, conclude that $-\arg D(\omega) \geq -\arg C(\omega)$ for $0 \leq \omega \leq \pi$, which justifies the name minimum phase for $C(z)$ in the first–order case.

(d) Generalize the first–order results proved in parts (a)–(c) to polynomials $A(z)$ and $B(z)$ of arbitrary order; in this case, the $\alpha_k$ are either real or occur in complex-conjugate pairs.

- p. 129–130, Exercise 3.6: We do not need the fact that $A(\omega)$ is minimum phase in the hint to prove (3.10.3); thus, the hint should read: "Use the fact that

$$\frac{1}{2\pi} \int_{-\pi}^{\pi} \ln |A(\omega)|^2 \, d\omega = 0 \qquad (3.10.3)$$

(The above result can be proven using the Cauchy integral formula). Show that (3.10.3) implies

$$f_e = f_y \, \frac{r_y(0)}{r_e(0)} \qquad (3.10.4)$$

and thus that minimizing $r_e(0)$ maximizes $f_e$.

- p. 132, Exercise 3.12: change last sentence to "Show that the above estimator is quite similar to (3.7.8) and (3.7.9) for large $N$."
- p.137: change "overlayed" to "overlaid" (4 occurrences).
- p. 137, Exercise C3.17: Move last sentence of part (b) to part (c).
- p. 157, line below (4.5.12): change "$\mathcal{R}(S) \in \mathcal{R}(A)$" to "$\mathcal{R}(S) \subset \mathcal{R}(A)$".
- p. 176, Exercise 4.2: remove "and that $\varphi$ is zero mean".
- p. 217, Exercise 5.9: change "(3.8.5)" to "(3.9.17)".
- p. 219, Exercise C5.13, part (c): change to "use $m = 8$, 16, and 30".
- p. 248, equation (6.6.3): change "=" to "$\simeq$".
- p. 249, line above (6.6.6): change "proved" to "proven"
- p. 249, Exercise 6.3: Change "Using the results in Exercise 6.2" to "Using the results in Exercise 2.13".
- p. 249, Exercise 6.4: Change the last two sentences to "Specialize equation (6.6.6) to a ULA and compare to the results obtained in Exercise 6.2."
- p. 250, Exercise 6.6: Change "$\theta^0$" to "$\theta_0$" in the last paragraph.
- p. 254, Exercise C6.14: Change "`df5c.mat`" to "`submarine.mat`" and "7–element" to "6–element". Remove "and with good approximation, we can assume there is only one source." Last sentence, change "submarine" to "submarine(s)"