# Chapter One

- page 16 at the end of line 28: "date rate" should be changed to "data rate"
- Page 23. In Table 1.1, the 3G Broadband wireless entry, 1.7-1.85 MHz and 2.5-2.69 MHz should be 1.7-1.85 GHz and 2.5-2.69 GHz, respectively.

# Chapter Two

- Page 30, equation (2.3):  $f_D = \frac{v}{\lambda} \cos(\theta)$ , i.e.  $\lambda$  divides the velocity v, not  $\theta$ .
- Page 32, second line of Example 2.1, the cell radius of 100 m should be changed to 10 m (this is used later in the solution where we set d = 10 m.) Also in this example, the last line has  $P_t = 43.9$  kW, which should be changed to  $P_t = 43.9$  W
- Page 36, In Figure 2.5 the legend shows the same dot-dash line being used for transmit antenna height and critical distance. Only the critical distance is the dot-dash line (at about 3.1 on the x-axis). The transmit antenna height is the vertical dashed line at about 1.7 on the x-axis.
- Page 36, about a third of the way down, "slowing increasing" should read "slowly increasing".
- Page 36. 6 lines from the end "out of phase by at least  $\pi$ " should read "out of phase by approximately  $\pi$ "
- Page 40, in equation 2.24,  $\lambda/(4\pi(d+d'))$  should be inserted before L(v).
- Page 44. 3rd line. cooperative should be changed to cooperation.
- page 44, equation (2.37),  $(\gamma_1 \gamma_2)$  should be changed to  $(\gamma_2 \gamma_1)$ .
- Page 47, In first line of Soln to Example 2.3, MMSE error equation should be changed to MMSE equation.
- Page 47, Example 2.3, 2 lines after  $F(\gamma)$  expression,  $10\gamma \log_{10}(d)$  should be changed to  $10\gamma \log_{10}(d_i)$
- Page 50, Equation 2.48, we need not assume that  $\alpha$  is the same for all blocking objects to get the Gaussian distribution, since if the *i*th object has attentuation constant  $\alpha_i$ ,  $\sum \alpha_i d_i$  will also converge to a Gaussian distribution by the CLT.
- Page 51, Equation 2.49, it is assumed that the mean  $\mu_{\psi_{dB}}$  is the same at the two points whose autocorrelation is being measured.
- The first paragraph of Section 2.8 (pg. 51) states that Figure 2.1 illustrates the variations of the combined path loss and shadowing model. However, this model is only accurate for  $d > d_0$ , so Fig. 2.1 must start at  $d = d_0$  instead of d = 0 for it to be applicable to this model.
- Page 54, In eqn. 2.57, >= should be >, based on the definition of  $P_A$ .
- Page 54, 3rd line from bottom,  $\overline{P}_R$  should be changed to  $\overline{P}_r(R)$
- Page 58, problem 2.16, plot should go from 1 to 1000 m to get the three segments. Also assume a carrier frequency  $f_c = 900$  MHz and  $G_r = G_l$ .

- Page 59, problem 2.21, to be consistent with chapter notation, change  $\mu$  dBm to  $\mu_{\psi_{dB}}$  dBm and  $\sigma_{\psi}$  dBm to  $\sigma_{\psi_{dB}}$  dBm
- Page 60, problem 2.25, as stated is the same as Example 2.7. The problem should be changed such that lines 2-3 read "the received power due to path loss at the cell boundary equals twice the desired level for nonoutage".

# **Chapter Three**

- Page 65, Equation 3.2,  $\phi_{D_n}$  should be changed to  $\phi_{D_n}(t)$  12 lines later, the definition of  $\phi_{D_n}$  should be changed to  $\phi_{D_n}(t) = \int_t 2\pi f_{D_n}(\tau) d\tau$ .
- Page 66, Equation 3.3,  $\phi_{D_n}$  should be changed to  $\phi_{D_n}(t)$ .
- Fourth line of pg. 72, should say "Consider now the autocorrelation and cross correlation..."
- Page 70, line 4, excees should be changed to excess.
- Page 70, equation 3.11, to be consistent with later expressions, the generic sum  $\sum_{n}$  should be changed to  $\sum_{n=0}^{N(t)}$ .
- Page 70, line before (3.11), change " $u(t \tau_i) \approx u(t)$  for all *i* and we can rewrite (3.4) as" to " $u(t \tau_i) \approx u(t \tau)$  for all *i*, where  $\tau$  is the delay of the LOS component. Normalizing  $\tau = 0$ , we can rewrite (3.4) as"
- Page 71, In equations (3.14) and (3.15), the sum should start at n = 0 instead of n = 1.
- Page 72, In Equation (3.21) there should be an expectation in front of the final cosine expression.
- Page 72-74, In Equations (3.21)-(3.22) and (3.24)-(3.27) the wavelength  $\lambda$  should divide the velocity-time product  $v\tau$ , not the cosine argument.
- Page 79, In the 2 lines that preced (3.37),  $P_r$  should be changed to  $\overline{P}_r$  ( $P_r$  occurs 3 times in these 2 lines).
- Page 91, Figure 3.14, the vertical dashed lines should be shifted out to where the functions first hit zero, and then  $T_c$  should be changed to  $2T_c$ , and  $B_D$  should be changed to  $2B_D$ .
- Page 92, 2 lines before Section 3.4,  $S(0, \rho)$  should be changed to  $S_c(0, \rho)$ .
- Page 97, Problem 3.17. part b. end of first line should read "separated in frequency by  $\Delta f$  instead of "separated in time by  $\Delta t$ ."

# **Chapter Four**

- On page 120, first line of 3rd paragraph, for definition of  $gamma_j[i]$ , B should be  $B_c$ . The definition should read  $gamma_j[i] = (|H_j[i]|^2 \bar{P})/(N_0 B_c)$ .
- On p.175, equation 6.15, there should be a  $d_{\theta}$  after the dz to indicate the dummy variable of the first integral.
- p.106 In the 8th line from the end, (1-.6)\*251550 = 125.78 kbps is shown, but the real value is 100.62 kbps

• p.118 In the 2nd line from the end, $\gamma(f) = |H(f)|^2 * P/N_0$  is shown, but that should be  $\gamma(f) = |H(f)|^2 * P/(N_0 * B).$ 

# **Chapter Five**

- Page 131, first line,  $(s_{i1}, ..., s_{iN})$  should be changed to  $[s_{i1}, ..., s_{iN}]^T$
- Page 131, last line, equation (5.17),  $\mathbf{s}_i \mathbf{s}_k^T$  should be changed to  $\mathbf{s}_i^T \mathbf{s}_k$
- Page 139, 2nd line should read  $\mathbf{s}_k \mathbf{s}_i$  instead of  $\mathbf{s}_i \mathbf{s}_k$ . This change should also be made in Figrue 5.9 at the top of this page.

# Chapter Six

- Page 179, in Equation 6.27,  $A\sqrt{2T_b}$  should be changed to  $A\sqrt{2/T_b}$ .
- Page 185, in Equation 6.61, the dummy integration variable  $d\gamma_s$  should be changed to  $d\gamma$ .

#### **Chapter Seven**

- Page 216, in equation (7.27), the plus sign before the second term (i.e. preceeding  $\sqrt{\pi}$ ) should be a minus sign.
- Page 223, Equation 2.48, product should be  $\prod_{i=1}^{M}$  instead of  $\prod_{l=1}^{M}$ .
- Page 223, line after equation 2.48,  $c_1 = 1/\pi$  should be changed to  $c_1 = \alpha/\pi$

# **Chapter Nine**

- p.292, the line before (9.18) should say  $R/B = log_2(M)$ , not R/B = M, and the line after (9.18) should say M = 2(R/B) < 4, not M = R/B < 4.
- Page 294, Table 9.1, the header for the last column,  $S_j(\gamma)/\overline{S}$ , should be changed to  $P_j(\gamma)/\overline{P}$

# Chapter Ten

- Page 326, Equation 10.12, log should be base 2.
- Page 344, Figure 10.14, the directive antenna figure should not have a bold circle in it, the outer circle in this figure should have a narrow line as in the sectorized antenna pattern.
- page 388. In equation 12.24 at the bottom, in the 2nd to last line of the H matrix,  $h_{\mu-2}$  should be  $h_{\mu}$ .

# Chapter 14

• pg. 503 The paper by Vishwanath, Tse, and LaRoia mispells the first author's name: the correct spelling is Viswanath.

# Appendix B

• p.582 In the 5th line from the beginning, det[sigma] should be — det[sigma] —. i.e. that value should be an absolute determinant.

# Bibliography

• pg. 629: The paper by Vishwanath, Tse, and LaRoia mispells the first author's name: the correct spelling is Viswanath.