Spacecraft Dynamics and Control - An Introduction: Errata

January 9, 2014

This document contains a list of errata found in the book. It will be periodically updated. Readers are encouraged to submit errata to aderuiter@ryerson.ca.

Chapter 1

Page 18: "It is easy to from the..." → "It is easy to see from the..."

Chapter 3

Page 96: "Substituting (7.18) and (7.19) into (3.77)..." → "Substituting (3.80) and (3.81) into (3.77)..."

Chapter 7

Page 153: Equation (7.9) should read

$$1 - \frac{\rho^3}{r^3} = -3q - \frac{3 \times 5}{2!}q^2 - \frac{3 \times 5 \times 7}{3!}q^3 - \cdots$$

Chapter 11

Page 222: "The angles ψ, θ and ψ equivalently represent the attitude." → "The angles ϕ, θ and ψ equivalently represent the attitude."

Chapter 20

Page 358: Equations (20.1) and (20.2) should include $T > 0$.

Page 360: Equation (20.3) should include $T > 0$.

Page 361: Equation (20.4) should include $T > 0$.

Chapter 21

Page 374: "In general, we can write an asymptotically stable transfer function with integrators in the form..." → "In general, we can write an asymptotically stable transfer function with integrators and zeros in the left-half plane in the form..."

Chapter 22

Page 388: "For simplicity, we restrict $a_i > 0$ and $b_i > 0$ for $i = 1, ..., m$ and $j = 1, ..., n$." → "For simplicity, we restrict $a_0 > 0$, $a_i \geq 0$ and $b_j \geq 0$ for $i = 1, ..., m$ and $j = 1, ..., n$."

Chapter 25

Page 478: "We will assume that the process and measurement noise are also uncorrelated with both the a priori and a posteriori state estimates, which means

$$E[\mathbf{e}_k^- \mathbf{w}_k^T] = \mathbf{0}, \quad E[\mathbf{e}_k \mathbf{w}_k^T] = \mathbf{0}, \quad E[\mathbf{e}_k^- \mathbf{v}_k^T] = \mathbf{0}, \quad E[\mathbf{e}_k \mathbf{v}_k^T] = \mathbf{0},$$

for any k."

should be replaced by

"We will assume that the process and measurement noise are also uncorrelated with both the a posteriori and a priori state estimate errors respectively, which means

$$E[\mathbf{e}_k \mathbf{w}_k^T] = \mathbf{0}, \quad E[\mathbf{e}_k^- \mathbf{v}_k^T] = \mathbf{0},$$

for any k."

Chapter 26

Page 533: Equation (2.75) should read

$$\begin{aligned} \det\left[s^2\mathbf{M}_c + s\hat{\mathbf{D}}_c + \mathbf{K}_c\right] &= \det\begin{bmatrix} s^2 I & s^2\bar{\mathbf{b}}^T \\ s^2\bar{\mathbf{b}} & s^2\mathbf{1} + s\mathbf{D}_c + \mathbf{\Lambda}_c \end{bmatrix}, \\ &= Is^2\prod_{i=1}^{n}\left(s^2 + 2\zeta_{c,i}\bar{\omega}_{c,i}s + \bar{\omega}_{c,i}^2\right) - s^4\bar{\mathbf{b}}^T\mathbf{H}(s)\bar{\mathbf{b}}. \end{aligned}$$

Appendix A

Page 553: In the table of Laplace transforms,

$$t^n \qquad \frac{n!}{s^n}$$

should be replaced by

$$t^n \qquad \frac{n!}{s^{n+1}},$$

and

$$t^n e^{-at} \qquad \frac{n!}{(s+a)^n}$$

should be replaced by

$$t^n e^{-at} \qquad \frac{n!}{(s+a)^{n+1}}.$$