

**ERRATA
(and UPDATES)**

Statistical Orbit Determination
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Published by Elsevier, 2004

(As of Dec. 27, 2007)

Preface

p. xiv, upper half of page

Replace TLE source under Goddard Space Flight Center with
<http://www.space-track.org/per/login.pl> (registration required)

Chapter 2

p. 37, lower half of page, Example 2.2.5

Phrase reads: “the eccentric anomaly is 159.628138°”

Should read: “the true anomaly is 159.628134°” [note: this numerical value is consistent with the number of digits given for the state]

p. 37, lower half of page, Example 2.2.5

Velocities should be negative, that is:

$$\dot{X} = -3921.809270$$

$$\dot{Y} = -6300.799313$$

$$\dot{Z} = -1520.178404$$

p. 60, lower half of page:

Phrase following Eq. (2.3.37) reads: “which is obtained using Eqs. (2.3.31) and (2.3.32).”

Should read: “which is obtained using Eqs. (2.3.32) and (2.3.33) and assuming small eccentricity.”

p. 61, upper half of page:

The numerator in the equation for D_n reads: 2Π

Should read: 2π

p. 61, upper half of page:

Sentence after D_n uses the term: “sidereal day”

Should read: “sidereal day”

p. 69, upper half of page:
Phrase reads: “. index[aut]Schutz, B. E.”
Delete entire phrase.

Page 70, upper half of page:
add following at end of paragraph that begins with “As noted previously, Eq. (2.3.46) ...”:
“Numerical integration methods are discussed by Dahlquist and Björck (1974), for example.”

p. 76, Table 2.4.1
add following line after the last line for January 1, 1999:
January 1, 2006 14

p. 88, upper half of page:
Phrase reads: “(a, e, i, Ω , ω , M_0). Express the angles in degrees.”
Should read: “(a, e, i, Ω , ω , M_0 or t_p). Express the angles in degrees. Assume $t=0$ for the position and velocity.”

p. 88, lower half of page, Exercise 7:
Phrase reads: “+ mean radius of Earth.)”
Should read: “+ mean equatorial radius of Earth.)”

p. 88, lower half of page, Exercise 9:
Add following: The semimajor axis of the Moon’s orbit is 384,000 km, and semimajor axis for the Sun is 149,599,000 km.

p. 89, lower half of page:
Phrase reads: “Selective Ability”
Should read: “Selective Availability”

Chapter 3

p. 102, upper half of page:
Eq. (3.3.3) should read as

$$\tilde{\rho} = c(T_R - T_T) + c(a_R - a_T) + c(b_R(T_R - T_0) - b_T(T_T - T_0)) + \varepsilon$$

p. 118, upper half of page
Combine first two paragraphs.

p. 151, upper half of page
Problem number 1:
Change as follows:
a. TRANSIT (assume $a=7478$ km): 150 MHz
b. GPS (assume $a=26561$ km): 1575 MHz

Chapter 4

p. 160, upper half of page:

Phrase reads: “(Lutchke et al., 2003)”

Should read: (Luthcke et al., 2003)

p. 200, the line following Eq. (4.7.7):

Phrase reads: “is postmultiplied by the quantity $H_k^T R_k^{-1}$, ...”

Should read: “is postmultiplied by the quantity $\tilde{H}_k^T R_k^{-1}$, ...”

p. 210, lower half of page:

Phrase reads: “The flow chart ... is given in Fig. 4.7.4.”

Should read: “The flow chart ... is given in Fig. 4.8.1.”

p. 212, upper half of page:

Phrase reads: “Integrate reference trajectory and state transition matrix from t_{i-1} to t_i .”

Should read: “Integrate reference trajectory and state transition matrix from t_{i-1} to t_i .”

p. 212

Figure 4.8.1 should be labeled Figure 4.7.4

p. 240

Renumber Figure 4.12.1 as Figure 4.13.1

p. 242

Renumber Figure 4.13.1 as Figure 4.13.2

p. 242

Renumber Figure 4.13.2 as Figure 4.13.3

p. 262, lower half of page:

Phrase reads: “Lutchke, S. B., ...)”

Should read: “Luthcke, S. B., ...)”

p. 280, the matrix for $\bar{P}(t_1)$ in the middle of the page:

Matrix element, row 1, column 1 includes the term t_1

This term in the matrix element should read t_1^2 , so the element should be $4 + 2t_1^2 + \frac{t_1^4}{4}$

p. 280, the matrix for $\bar{P}(t_1)$ in the middle of the page:

Matrix element, row 1, column 2 and also row 2, column 1 includes the term $\frac{t_1^3}{3}$

This term in the matrix element should read $\frac{t_1^3}{2}$

Chapter 5

p. 291, lower half of page

Last sentence of Section 5.3 reads: "...in Eq. (5.3.10)."

Should read: "...in Eq. (5.3.1)."

p. 381, lower half of page:

Phrase reads: Thornton, Thornton, C. L., ...

Should read: Thornton, C. L., ...

Chapter 6

p. 422, middle of page Eq. (6.9.11)

Equation reads: $\theta_{12}(t, 0) = -\theta_{11}(t, 0)\omega^2$

Equation should read: $\theta_{12}(t, 0) = -\theta_{11}(t, 0)/\omega^2$

p. 420-423, Example 6.9

See powerpoint presentation (File: example_6.9.ppt) for additional discussion and clarification

Appendix B

p. 477, upper half of page, third bullet on the page

Phrase reads: "If **A** is singular if ..."

Should read: "**A** is singular if ..."

Appendix D

p. 489

Add note at bottom of page:

$C_{2,0}$ includes the permanent tide (see p. 65)

Appendix F

p. 499, middle of page
Equation for $\eta(t)$ has units m/sec
Units should be m/sec²

Appendix H

p. 518, lower half of page, first paragraph in H.2:
Phrase reads: “It is a function of the precession...”
Should read: “It is a function of the precession...”

Bibliography Abbreviations

p. 523
Add the following abbreviations:
AGU American Geophysical Union
AAS American Astronautical Society

Bibliography

p. 526, upper half of page:
Phrase reads: “[11] Born ... and G. Hegler, ...”
Should read: “[11] Born ... and G. Heyler, ...”

p. 526, upper half of page:
Phrase reads: [13] Boucher, C., Z. Altamini, ...”
Should read: [13] Boucher, C., Z. Altamimi, ...”

p. 526, lower half of page:
Phrase reads: “[19] Carlson, ..., pp. 1239-1265, ...”
Should read: “[19] Carlson, ..., pp. 1259-1265, ...”

p. 531, lower half of page:
Phrase reads: “[84] Lutchke, S. B., ...”
Should read: “[84] Luthcke, S. G., ...”

p. 538, lower half of page:

Phrase reads: "Hegler, G, 60"

Should read: "Heyler, G., 60"

p. 539, upper half of page:

Phrase reads: "Lutchke, S. B., ..."

Should read: "Luthcke, S. G., ..."

p. 543, upper half of page:

Phrase reads: "ICESat, 128, ..."

Should read: ICESat (Ice, Cloud and land Elevation Satellite), 128, ..."