

Space Mission Analysis and Design, 3rd Edition, 1st Printing
Errata as of December 19, 2008

The following errata are provided to keep this volume as useful as possible. We would appreciate any other corrections or suggestions being reported to:

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PAGE	REPORTED ERRATA
Inside Front Cover	1 st Table, 3 rd row, 3 rd column: Permittivity of vacuum value should read $1/\mu_0 c^2 = 8.854\ 187\ 817 \times 10^{-12}$
97	In Fig. 5-1C: Put arrowhead on other end of “Roll Rotation”
101	Table 5-2, 7 th row, 3 rd column: Arc tan [$\hat{C} \cdot (\hat{A} \cdot \hat{B})$] . . . should read Arc tan [$\hat{C} \cdot (\hat{A} \times \hat{B})$] . . .
110	1 st full paragraph: both references to Eq. (5-13b) should be to Eq. (13-c).
110	Eq. (5-15) should read: $F = F_0 (1 - \Phi / 360 \text{ deg})$
110	5 th full paragraph, 9 th line: “If $\Phi > \Phi_{90}$,” should read “If $\Phi / 2 \geq$ the larger $ A_{z_N} \pm \Phi_{90} $,”
112–114	These pages have been revised to improve clarity. The revised pages follow the errata listing.
115	In Fig. 5-15B: The celestial equator is 10 degrees too high.
122	Eq. (5-54), left-hand side: “tan ω_{inc} ” should read “tan w_{inc} ”.
122	Eq. (5-55), left-hand side: “tan ω_{inc} ” should read “tan w_{inc} ”. Same revision should be made in text reference in preceding paragraph.
136	In Eq. (6-9), “ v^2 ” should be “ V^2 ”
140	1 st paragraph, v should equal “1.5708” not “1.57198”
143	In Eq. (6-20), “1.032.37” should be “1.032 37”
144	In the caption of Table 6-4, “precursor” should be “precession” In Table 6-4, the row for \mathcal{Y} for the Shuttle, “0.002 42” should be “0.000 31” and “0.001 10” should be “0.000 14”
177	In Fig. 7-8, the F10.7 and Ap labels are reversed from top to bottom, i.e., F10.7 = 225, Ap = 20 is the top line, F10.7=175, Ap = 16 is the second line, etc. Also, in the caption, “Ballistic Coefficient of 65 kg/m ² ” should be “Ballistic Coefficient of 100 kg/m ² ”
186	In Table 7-9, last entry, 4th column: Reference should read “Eq. (6-37)” not “Eq. (6-33)”.
192	On Fig. 7-10, “S/2” is half the distance between the centers of the two coverage circles.
192	On Fig. 7-11, the spacing between the two orbits is D_{maxS} .
198	In Table 7-12, Step 6, “Table 7-14” should be “Table 7-13” in both columns.
209	Fig. 8-2 has been corrected. The revised figure appears in the pages following the errata listing.
218	On Fig. 8-11, “1–8” should be “1–8 Å”
234	Last paragraph, 3rd line: “Sec. 8.1.4” should read “Sec. 8.1.5”.
242	1st partial paragraph, 6th line: “NASA Earth Observing System” should read “Terra spacecraft in NASA Earth Observing System”.

255	In Fig. 9-4, in the Visible, Ultraviolet, and Infrared regions of the spectrum, the wavelength units should be “ μm ,” not “m”. X-Rays sample mission “AXAF” should read “Chandra”.
264	The expression in the fifth line following Eq. (9-10) should be “ $1/\sin \varepsilon$,” not “ $1/\cos \varepsilon$.”
264	Last line, Paragraph above figure: “Table 9-8” should read “Table 9-9”
265	In Table 9-9, in the Visible column of the top row, “0.366” should be “0.366 m”.
286–287	Last paragraph on page 286 and text above Table 9-15 on page 287 have been rewritten. Corrected pages appear following the errata listing.
289	Table 9-15, Step 6, Rows 2 and 3, “FireSat” column: “Fig. 9-25B” should read “Fig. 9-22”
290	Table 9-15, Step 7, Row 1, “FireSat” column: “ N_e ” should read “ N_e ”
294	In Eq. (9-31), “ 10^{-5} ” should read “ 10^{-5} ”.
296	Fig. 9-26, wavelength axes unit: “(mm)” should read “(μm)”
297	1st paragraph in Sec. 9.6.2, 3rd line: “EOS” should read “Terra”.
298	1st paragraph, 1st and 4th lines: “EOS” and “EOS AM” should read “Terra”
327	In Table 10-20 <ul style="list-style-type: none"> • “Reaction Wheels” row, “Weight” column: “$2 \ 1 \ 0.4 \times H$” should read “$2 + 0.4 \times H$” and “$5 \ 1 \ 0.1 \times H$” should read “$5 + 0.1 \times H$” • “Control Moment Gyros” row, “Weight” column: “$4 \ 1 \ 0.03 \times T$” should read “$4 + 0.03 \times H$”
361	4 th paragraph, 8 th line: cross reference should read Sec. 11.1.4 not Sec. 11.5
385	Table 11-19, “Bandwidth” row: “Eq. (13.24)” should read “Eq. (13.26)”
405	Table 11-29, 3 rd row, “Complex” column: “13,000–1,500” should read : “13,000–15,000”
411	3rd paragraph, 3rd line: “(260 kg)” should read “(118 kg)”
412	Table 11-34, 4 th row, “Reference” column: “Table 11-35” should read “Table 11-36”
427	Last paragraph, Last line: “Table 11-40” should read “Table 11-42”
428-458	“Thermal” section rewritten. The revised section is contained in the pages following the errata listing.
480	Eq. (11-52): “ E_i ” should read “ E_i ”
488	Paragraph above Eq. (11-63), 3 rd line: “ F_{ix} ” should be “ F_{iu} ”
489	Eq. (11-67): “ E_i ” should read “ E_i ”
514-518	Reference section updated due to “Thermal” section rewrite. The revised reference pages follow the errata listing.
544	3 lines above Fig. 13-4: “. . . $2^2 + 2^1 + 0^0 + 0.5 = 6.5 \text{ V}$. . .” should read “. . . $1 \cdot 2^2 + 1 \cdot 2^1 + 0 \cdot 0^0 + 0.5 = 6.5 \text{ V}$ ”
548	In Sec. 13.2.2: <ul style="list-style-type: none"> • 1st paragraph, last line: “Sec. 9.1” should read “Sec. 9.5.5” • 2nd paragraph, 3rd line: replace “From Eq. (9-35)” with “Here” • 3rd paragraph, 1st line: “Eq. (9-34)” should read “Eq. (9-23)” • 3rd paragraph, 2nd line: “11 Gbps” should read “85 Mbps” • 3rd paragraph, 3rd line: “1 m^2” should read “30 m” • 3rd paragraph, 6th line: “2.5 million pixels” should read “2,900 pixels” and “8.5 Mbps” should read “39 kbps”

549	<p>Continuing in Sec. 13.2.2:</p> <ul style="list-style-type: none"> • 1st line: “2 bits” should read “8 bits” • In Table 13-7, Parameter column: “Scan width (km)” should read “SW = Scan width (km)” • In Table 13-7, FireSat column should read: 700; 6,800; 30; 2,700; 57.9; Continuous; 145 $\mu\text{s}/\text{scan width}$; 1.6; 8; 0.95; 85×10^6 • Footnote equation should read: $\left((25 \times 25) \text{ km}^2 \right) \left(\frac{10^3 \text{ m}}{\text{km}} \right)^2 \left(\frac{1 \text{ pixel}}{30 \text{ m}} \right)^2 \left(\frac{1}{4 \text{ min}} \right) \left(\frac{4 \text{ min}}{60 \text{ sec}} \right)$
555	3rd paragraph: “ $C/N_0 - \log B$ ” should read “ $C/N_0 B$ or, in dB, is $C/N_0 - 10 \log B$ ”. Also “Eq. (13-15a)” should read “Eq. (13-15b)”
557	Fig. 13-7 has been revised. See corrected page appears following the errata listing.
566	In Table 13-12, the asterisk corresponding to the footnote should be in the rightmost column (Downlink Power) of the X-band row. The value in that cell should be “-142/4 kHz*”. Also Downlink Power Ku value should read “12.5-12.75” not “12.5-2.75”.
567	Table 13-13 has been revised. See corrected page appears following the errata listing.
577	In Fig. 13-16: Added axes labels in “Time” and “Frequency” columns. See corrected table that follows the errata listing.
584	In Fig. 13-20: “50 W @ 60 GHz” (top right corner) should read “5 W @ 60 GHz”
669	Fig. 16-17 has been updated. See updated table in the pages following the errata listing.
677	In Table 16-20, top row: All “ V_n ” should read “ V_g ”
703	Table 17-9 has been revised. See corrected page appears following the errata listing.
790	In 3rd full paragraph, 2nd line: “Herzberg” should be “Hertzfeld”
818	Last reference entry: “Herzberg” should be “Hertzfeld”
840-852	Sec. 21.2 has been revised. Revised section appears following the errata listing.
847	In Fig. 21.4: Units added to axes labels, i.e., “Penetrating Projectile Diameter (cm)” and “Impact Velocity (km/s)”
899	In Fig. B-1: second “ ϕ ” from origin should read “ ϕ ”
900	In Eq. (B-7), “ $\tan^{-1}(Y/Z)$ ” should be “ $\tan^{-1}(Y/X)$.”
901	1st line of text: “ $\phi = \sin^{-1} Z$ ” should read “ $\phi = \sin^{-1}(Z/r)$ ”
903	<ul style="list-style-type: none"> • “Specific angular momentum” section, 1st paragraph: “h, r, and V” are vectors and should appear in bold type • “True anomaly” section, last equation: radical sign should not extend over tan.
New Sec. D.2	Sec. D.2, “Thermal Geometry” added to the Appendices. Added section follows the errata listing.
908-913	Appendix E has been both corrected and revised to improve clarity. The revised appendix is contained in the following pages.
Inside Rear Cover	In “Explanation of Earth Satellite Parameters,” entry for Col. 41: 1st exponent should not be negative.