E. Canuto, C. Novara, L. Massotti, C. Perez Montenegro, D. Carlucci, Spacecraft Dynamics and Control. the Embedded Model Control approach, Butterworth-Heinemann (Elsevier), 2018

Chapter 7 Errata corrigenda

Erratum page 365

where dJ is an inertia decay that equalizes the transversal moments of inertia in about 300 s, and $\boldsymbol{\omega}(0)$ is the initial angular rate dominated by the minor-axis spin rate $\underline{\omega}_3 = 10$ rad/s.

Corrigendum

where dJ is an unrealistic inertia decay that equalizes the transversal moments of inertia in about 300 s, and $\boldsymbol{\omega}(0)$ is the initial angular rate dominated by the minor-axis spin rate $\underline{\omega}_3 = 10$ rad/s.

Erratum, page 347, last paragraph before Section 7.5 (October 2019)

The first US satellite Explorer I launched January 31, 1958, was a 14-kg pencil-like satellite with a ratio $J_3 / J_t = 1/75$. It was injected into a 0.58 rad inclined low Earth orbit while spinning about the minor axis $\vec{b}_3$ at a rate of $\omega_3 \cong 70$ rad/s. Just after the first orbit period of about $T_o \cong 5400$ s, the nutation angle reached a value of $\nu \cong 1$ rad because of the energy dissipated by two flexible wire antennas.

Corrigendum

The first US satellite Explorer I launched January 31, 1958, was a 14-kg pencil-like satellite with a ratio $J_3 / J_t \cong 1/75$. It was injected into a 0.58 rad inclined highly eccentric ($e \cong 0.14$) low Earth orbit while spinning about the minor axis $\vec{b}_3$ at a rate of $\omega_3 \cong 78.5$ rad/s. Just after the first orbit period of about $T_o \cong 5400$ s, the nutation angle reached a value of $\nu \cong 1$ rad because of the energy dissipated by four flexible wire antennas.

Addendum to page 347, last sentence before Section 7.5 (October 2019)

A commonly employed alternative for telecommunication and scientific satellites is the so-called dual spin stabilization, where a spinning wheel is mounted in the spacecraft and the spin axis is aligned with the axis to be inertially oriented in the direction required by antennas and scientific instruments. Regulation of the spin rate allows gyroscopic stabilization under internal losses of minor and intermediate inertia axes [10], [29].

Erratum page 336, first row (October 2019)

In the former case, the complex state variable $z = H_1 + j\gamma_2 / \gamma_1 H_2$ allows the transverse equations of (7.126) to be rewritten as the scalar equation

Corrigendum

In the former case, the complex state variable $z = H_1 + j\sqrt{\gamma_2 / \gamma_1} H_2$ allows the transverse equations of (7.126) to be rewritten as the scalar equation

Equation (7.161) (October 2019)

Erratum

$$\begin{bmatrix} J & J_s I_3 \\ J_s I_3 & J_s I_3 \end{bmatrix} \begin{bmatrix} \dot{\boldsymbol{\omega}} \\ \dot{\boldsymbol{\upsilon}} \end{bmatrix} = \begin{bmatrix} -\boldsymbol{\omega} \times J & -\boldsymbol{\omega} \times J_s \\ 0 & -\beta_s I_3 \end{bmatrix} \begin{bmatrix} \boldsymbol{\omega} \\ \boldsymbol{\upsilon} \end{bmatrix}. \tag{7.161}$$

Corrigendum

$$\begin{bmatrix} J & J_s I_3 \\ J_s I_3 & J_s I_3 \end{bmatrix} \begin{bmatrix} \dot{\boldsymbol{\omega}} \\ \dot{\boldsymbol{\upsilon}} \end{bmatrix} = \begin{bmatrix} -\boldsymbol{\omega} \times J & -\boldsymbol{\omega} \times J_s I_3 \\ 0 & -\left(\beta_s I_3 + \boldsymbol{\omega} \times J_s I_3\right) \end{bmatrix} \begin{bmatrix} \boldsymbol{\omega} \\ \boldsymbol{\upsilon} \end{bmatrix}. \tag{7.161}$$