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Autore	Hughes Peter C
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Nota di contenuto	3.7 Dynamics of a System of Rigid Bodies3.8 Problems; Chapter 4 Attitude Dynamics of a Rigid Body; 4.1 Basic Motion Equations; 4.2 Torque-Free Motion; R Inertially Axisymmetrical; 4.3 Torque-Free Motion; R Tri-inertial; 4.4 Stability of Motion for R; 4.5 Motion of a Rigid Body Under Torque; 4.6 Problems; Chapter 5 Effect of Internal Energy Dissipation on the Directional Stability of Spinning Bodies; 5.1 Quasi-Rigid Body with an Energy Sink, R; 5.2 Rigid Body with a Point Mass Damper, R + R; 5.3 Problems; Chapter 6 Directional Stability of

Multispin Vehicles; 6.1 The R + W Gyrostat
6.2 Gyrostat with Nonspinning Carrier6.3 The Zero Momentum Gyrostat; 6.4 The General Case; 6.5 System of Coaxial Wheels; 6.6 Problems; Chapter 7 Effect of Internal Energy Dissipation on the Directional Stability of Gyrostats; 7.1 Energy Sink Analyses; 7.2 Gyrostats with Discrete Dampers; 7.3 Problems; Chapter 8 Spacecraft Torques; 8.1 Gravitational Torque; 8.2 Aerodynamic Torque; 8.3 Radiation Torques; 8.4 Other Environmental Torques; 8.5 Nonenvironmental Torques; 8.6 Closing Remarks; 8.7 Problems; Chapter 9 Gravitational Stabilization; 9.1 Context
9.2 Equilibria for a Rigid Body in a Circular Orbit9.3 Design of Gravitationally Stabilized Satellites; 9.4 Flight Experience; 9.5 Problems; Chapter 10 Spin Stabilization in Orbit; 10.1 Spinning Rigid Body in Orbit; 10.2 Design of Spin-Stabilized Satellites; 10.3 Long-Term Effects of Environmental Torques, and Flight Data; 10.4 Problems; Chapter 11 Dual-Stabilization in Orbit: Gyrostats and Bias Momentum Satellites; 11.1 The Gyrostat in Orbit; 11.2 Gyrostats with External Rotors; 11.3 Bias Momentum Satellites; 11.4 Problems; Appendix A Elements of Stability Theory; A.1 Stability Definitions
A.2 Stability of the OriginA.3 The Linear Approximation; A.4 Nonlinear Inferences from Infinitesimal Stability Properties; A.5 Liapunov's Method; A.6 Stability of Linear Stationary Mechanical Systems; A.7 Stability Ideas Specialized to Attitude Dynamics; Appendix B Vectrices; B.1 Remarks on Terminology; B.2 Vectrices; B.3 Several Reference Frames; B.4 Kinematics of Vectrices; B.5 Derivative with Respect to a Vector; Appendix C List of Symbols; C.1 Lowercase Symbols; C.2 Uppercase Symbols; C.3 Lowercase Greek Symbols; C.4 Uppercase Greek Symbols; C.5 Other Notational Conventions; References Errata

Sommario/riassunto

Pointing a satellite in the right direction requires an extremely complex system - one that describes the satellite's orientation and at the same time predicts and either uses or neutralizes external influences. From its roots in classical mechanics and reliance on stability theory to the evolution of practical stabilization ideas, Spacecraft Attitude Dynamics offers comprehensive coverage of environmental torques encountered in space; energy dissipation and its effects on the attitude stability of spinning bodies; motion equation for four archetypical systems derived and used repeatedly throu