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POSITION, VELOCITY, AND ACCELERATION OF THE VEHICLE MASS CENTER; 5.4 EQUATIONS OF MOTION OF AN ARBITRARY SYSTEM 5.5 FORCE EQUATIONS IN WIND AXES 5.6 FORCE AND MOMENT EQUATIONS IN BODY AXES (EULER'S EQUATIONS); 5.7 DISCUSSION OF THE SYSTEM OF EQUATIONS; 5.8 THE FLAT-EARTH APPROXIMATION; 5.9 STEADY STATES; 5.10 THE SMALL-DISTURBANCE THEORY; 5.11 EXACT LINEAR AERODYNAMICS AND THE TRANSFORMED EQUATIONS; 5.13 NONDIMENSIONAL EQUATIONS; 5.14 TRANSFORMS OF THE NONDIMENSIONAL EQUATIONS; 5.15 TRANSFORMATION OF AERODYNAMIC DERIVATIVES FROM ONE BODY-FIXED REFERENCE FRAME TO ANOTHER; CHAPTER 6 - Longitudinal aerodynamic characteristics-part 1; 6.1 THE BASIC LONGITUDINAL FORCES 6.2 PITCH STIFFNESS AND POSSIBLE CONFIGURATIONS FOR FLIGHT 6.3 PITCH STIFFNESS OF A GENERAL CONFIGURATION; 6.4 LONGITUDINAL CONTROL; 6.5 CONTROL HINGE MOMENT; 6.6 INFLUENCE OF A FREE ELEVATOR ON LIFT AND MOMENT; 6.7 THE USE OF TABS; 6.8 CONTROL FORCE TO TRIM; 6.9 CONTROL FORCE GRADIENT; 6.10 MANEUVERABILITY-ELEVATOR ANGLE AND CONTROL FORCE PER  $g$ ; CHAPTER 7 - Longitudinal aerodynamic characteristics-part 2; 7.1 BOB WEIGHTS AND SPRINGS; 7.2 INFLUENCE OF HIGH-LIFT DEVICES ON TRIM AND PITCH STIFFNESS; 7.3 INFLUENCE OF THE PROPULSIVE SYSTEM ON TRIM AND PITCH STIFFNESS 7.4 EFFECT OF STRUCTURAL FLEXIBILITY 7.5 GROUND EFFECT; 7.6 C.G. LIMITS; 7.7 LONGITUDINAL AERODYNAMIC DERIVATIVES; 7.8 THE  $V$  DERIVATIVES; 7.9 THE  $q$  DERIVATIVES; 7.10 THE DERIVATIVES; 7.11 AERODYNAMIC TRANSFER FUNCTIONS; 7.12 THE  $z$  DERIVATIVES; 7.13 AEROELASTIC DERIVATIVES; 7.14 SUMMARY OF THE FORMULAE; CHAPTER 8 - Lateral aerodynamic characteristics; 8.1 YAW STIFFNESS (WEATHERCOCK STABILITY); 8.2 YAW CONTROL; 8.3 ROLL STIFFNESS; 8.4 ROLLING CONTROL; 8.5 THE  $\alpha$  DERIVATIVES; 8.6 THE  $p$  DERIVATIVES; 8.7 THE  $r$  DERIVATIVES; 8.8 SUMMARY OF THE FORMULAE; CHAPTER 9 - Stability of steady flight 9.1 LONGITUDINAL MODES

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#### Sommario/riassunto

Geared toward upper-level undergrads, graduate students, and practicing engineers, this comprehensive treatment of the dynamics of atmospheric flight focuses especially on the stability and control of airplanes. An extensive set of numerical examples covers STOL airplanes, subsonic jet transports, hypersonic flight, stability augmentation, and wind and density gradients. The equations of motion receive a very full treatment, including the effects of the curvature and rotation of the Earth and distortional motion. Complete chapters are given to human pilots and handling qualities and to flight i

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