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## Nota di contenuto

Static Stability of Airfoils and Wings -- Equilibrium of an elementary airfoil model -- Aeroelastic divergence -- Stability criteria of airfoil aeroelastic equilibrium -- Equilibrium of airfoil with control surface.

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## Sommario/riassunto

This book delves into the fundamentals of aeroelasticity, providing a modern foundation for education and research in aeronautical engineering. It begins with a brief introduction to aeroelasticity and then explores the static stability of airfoils and wings, using elementary models to solve fluid-structure interaction problems under equilibrium conditions. The dynamics of the typical aeroelastic section are examined, including modal analysis and dynamic characterization. Analytical and numerical aerodynamic models are discussed for unsteady aerodynamics, offering tools for studying stability phenomena and calculating aeroelastic responses. The text covers aeroelastic response and stability analysis, demonstrating coupled aerodynamic models' behavior under varying parameters and predicting flutter phenomena. The dynamic aeroelasticity of wings is analyzed, presenting a time-domain simulation model to show flutter conditions and aeroelastic modes. Appendices provide insights on finite element modeling of beams, self-excited systems, and surface interpolation methods, with numerous examples for result replication, though no specific computational tools are suggested.

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