András Sóbester
Alexander I J Forrester

Aircraft Aerodynamic Design
Geometry and Optimization

Aerospace Series

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Aircraft Aerodynamic Design András Sóbester,Alexander I. J. Forrester,2014-09-23 Optimal aircraft design is impossible without a parametric representation of the geometry of the airframe We need a mathematical model equipped with a set of controls or design variables which generates different candidate airframe shapes in response to changes in the values of these variables This model s objectives are to be flexible and concise and capable of yielding a wide range of shapes with a minimum number of design variables Moreover the process of converting these variables into aircraft geometries must be robust Alas flexibility conciseness and robustness can seldom be achieved simultaneously Aircraft Aerodynamic Design Geometry and Optimization addresses this problem by navigating the subtle trade offs between the competing objectives of geometry parameterization It beginswith the fundamentals of geometry centred aircraft design followed by a review of the building blocks of computational geometries the curve and surface formulations at the heart of aircraft geometry The authors then cover a range of legacy formulations in the build up towards a discussion of the most flexible shape models used in aerodynamic design with a focus on lift generating surfaces The book takes a practical approach and includes MATLAB Python and Rhinoceros code as well as real life example case studies Key features Covers effective geometry parameterization within the context of design optimization Demonstrates how geometry parameterization is an important element of modern aircraft design Includes code and case studies which enable the reader to apply each theoretical concept either as an aid to understanding or as a building block of their own geometry model Accompanied by a website hosting codes Aircraft Aerodynamic Design Geometry and Optimization is a practical guide for researchers and practitioners in the aerospace industry and a reference for graduate and undergraduate students in aircraft design and multidisciplinary design optimization *Aircraft Aerodynamic Design* András Sóbester,Alexander I. J. Forrester,2014-11-17 Optimal aircraft design is impossible without a parametric representation of the geometry of the airframe We need a mathematical model equipped with a set of controls or design variables which generates different candidate airframe shapes in response to changes in the values of these variables This model s objectives are to be flexible and concise and capable of yielding a wide range of shapes with a minimum number of design variables Moreover the process of converting these variables into aircraft geometries must be robust Alas flexibility conciseness and robustness can seldom be achieved simultaneously Aircraft Aerodynamic Design Geometry and Optimization addresses this problem by navigating the subtle trade offs between the competing objectives of geometry parameterization It beginswith the fundamentals of geometry centred aircraft design followed by a review of the building blocks of computational geometries the curve and surface formulations at the heart of aircraft geometry The authors then cover a range of legacy formulations in the build up towards a discussion of the most flexible shape models used in aerodynamic design with a focus on lift generating surfaces The book takes a practical approach and includes MATLAB Python and Rhinoceros code as well as real life example case studies Key features Covers effective geometry

parameterization within the context of design optimization Demonstrates how geometry parameterization is an important element of modern aircraft design Includes code and case studies which enable the reader to apply each theoretical concept either as an aid to understanding or as a building block of their own geometry model Accompanied by a website hosting codes Aircraft Aerodynamic Design Geometry and Optimization is a practical guide for researchers and practitioners in the aerospace industry and a reference for graduate and undergraduate students in aircraft design and multidisciplinary design optimization **Introduction to Aircraft Aeroelasticity and Loads** Jan R. Wright,2015-02-23 Introduction to Aircraft Aeroelasticity and Loads Second Edition is an updated new edition offering comprehensive coverage of the main principles of aircraft aeroelasticity and loads For ease of reference the book is divided into three parts and begins by reviewing the underlying disciplines of vibrations aerodynamics loads and control and then goes on to describe simplified models to illustrate aeroelastic behaviour and aircraft response and loads for the flexible aircraft before introducing some more advanced methodologies Finally it explains how industrial certification requirements for aeroelasticity and loads may be met and relates these to the earlier theoretical approaches used Key features of this new edition include Uses a unified simple aeroelastic model throughout the book Major revisions to chapters on aeroelasticity Updates and reorganisation of chapters involving Finite Elements Some reorganisation of loads material Updates on certification requirements Accompanied by a website containing a solutions manual and MATLAB and SIMULINK programs that relate to the models used Introduction to Aircraft Aeroelasticity and Loads Second Edition is a must have reference for researchers and practitioners working in the aeroelasticity and loads fields and is also an excellent textbook for senior undergraduate and graduate students in aerospace engineering Aircraft Design Mohammad H. Sadraey,2024-11-25 Learn the aircraft design process from a systems engineering perspective designed for both aspiring and practicing aerospace engineers Aircraft design incorporates a range of technological areas including aerodynamics flight dynamics propulsion and structure Aircraft engineering design therefore requires techniques from systems engineering to integrate the requirements from these disparate areas into a coherent whole There has never been a greater need for successful aerospace engineers to have a grasp of systems engineering and its applications in the field Aircraft Design A Systems Engineering Approach meets this need with a volume which takes the reader from conceptual design to detail design Offering a systems engineering approach that weighs the needs of different aircraft components holistically it provides readers with a practical look into the process of aircraft design Now fully updated to reflect the latest industry developments it promises to continue as an indispensable tool for modern students in the field Readers of the second edition of Aircraft Design will also find Brand new material on structural design spoiler design winglets aircraft modification and modernization and more Detailed discussion of emerging topics including all electric aircraft design VTOL aircraft design and many others Guidance on the latest FAA requirements with a design impact Aircraft Design is ideal for senior undergraduate and graduate students interested in aircraft design advanced aircraft design and air

vehicle design The book may also be of interest to mechanical industrial and systems engineers working in the aerospace sector *Theory and Practice of Aircraft Performance* Ajoy Kumar Kundu,Mark A. Price,David Riordan,Peter Belobaba,Jonathan Cooper,Allan Seabridge,2016-09-26 Textbook introducing the fundamentals of aircraft performance using industry standards and examples bridging the gap between academia and industry Provides an extensive and detailed treatment of all segments of mission profile and overall aircraft performance Considers operating costs safety environmental and related systems issues Includes worked examples relating to current aircraft Learjet 45 Tucano Turboprop Trainer Advanced Jet Trainer and Airbus A320 types of aircraft Suitable as a textbook for aircraft performance courses Flight Simulation Software David Allerton,2022-12-19 Flight Simulation Software Explains the many aspects of flight simulator design including open source tools for developing an engineering flight simulator Flight simulation is an indispensable technology for civil and military aviation and the aerospace industry Real time simulation tools span across all aspects of aircraft development from aerodynamics and flight dynamics to avionics and image generation systems Knowledge of flight simulation software is vital for aerospace engineering professionals educators and students Flight Simulation Software contains comprehensive and up to date coverage of the computer tools required to design and develop a flight simulator Written by a noted expert with decades of experience developing flight simulators in academia this highly practical resource enables readers to develop their own simulations with readily available open source software rather than relying on costly commercial simulation packages The book features working software taken from operational flight simulators and provides step by step guidance on software design computer graphics parallel processing aircraft equations of motion navigation and flight control systems and more Explains both fundamental theory and real world practice of simulation in engineering design Covers a wide range of topics including coding standards software validation user interface design and sensor modelling Describes techniques used in modern flight simulation including distributed architectures and the use of GPUs for real time graphics rendering Addresses unique aspects of flight simulation such as designing flight control systems visual systems and simulator instructor stations Includes a companion website with downloadable open source software and additional resources Flight Simulation Software is a must have guide for all developers and users of simulation tools as well as the ideal textbook for relevant undergraduate and postgraduate courses in computer science aeronautical engineering electrical engineering and mechanical engineering programs **Conceptual Aircraft Design** Ajoy Kumar Kundu,Mark A. Price,David Riordan,2019-04-08 Provides a Comprehensive Introduction to Aircraft Design with an Industrial Approach This book introduces readers to aircraft design placing great emphasis on industrial practice It includes worked out design examples for several different classes of aircraft including Learjet 45 Tucano Turboprop Trainer BAe Hawk and Airbus A320 It considers performance substantiation and compliance to certification requirements and market specifications of take off landing field lengths initial climb high speed cruise turning capability and payload range Military requirements are discussed

covering some aspects of combat as is operating cost estimation methodology safety considerations environmental issues flight deck layout avionics and more general aircraft systems The book also includes a chapter on electric aircraft design along with a full range of industry standard aircraft sizing analyses Split into two parts Conceptual Aircraft Design An Industrial Approach spends the first part dealing with the pre requisite information for configuring aircraft so that readers can make informed decisions when designing vessels The second part devotes itself to new aircraft concept definition It also offers additional analyses and design information e g on cost manufacture systems role of CFD etc integral to conceptual design study The book finishes with an introduction to electric aircraft and futuristic design concepts currently under study Presents an informative industrial approach to aircraft design Features design examples for aircraft such as the Learjet 45 Tucano Turboprop Trainer BAe Hawk Airbus A320 Includes a full range of industry standard aircraft sizing analyses Looks at several performance substantiation and compliance to certification requirements Discusses the military requirements covering some combat aspects Accompanied by a website hosting supporting material Conceptual Aircraft Design An Industrial Approach is an excellent resource for those designing and building modern aircraft for commercial military and private use Advanced UAV Aerodynamics, Flight Stability and Control Pascual Marqués,Andrea Da Ronch,2017-07-11 Comprehensively covers emerging aerospace technologies Advanced UAV aerodynamics flight stability and control Novel concepts theory and applications presents emerging aerospace technologies in the rapidly growing field of unmanned aircraft engineering Leading scientists researchers and inventors describe the findings and innovations accomplished in current research programs and industry applications throughout the world Topics included cover a wide range of new aerodynamics concepts and their applications for real world fixed wing airplanes rotary wing helicopter and quad rotor aircraft The book begins with two introductory chapters that address fundamental principles of aerodynamics and flight stability and form a knowledge base for the student of Aerospace Engineering The book then covers aerodynamics of fixed wing rotary wing and hybrid unmanned aircraft before introducing aspects of aircraft flight stability and control Key features Sound technical level and inclusion of high quality experimental and numerical data Direct application of the aerodynamic technologies and flight stability and control principles described in the book in the development of real world novel unmanned aircraft concepts Written by world class academics engineers researchers and inventors from prestigious institutions and industry The book provides up to date information in the field of Aerospace Engineering for university students and lecturers aerodynamics researchers aerospace engineers aircraft designers and manufacturers *Sustainable Aviation Technology and Operations* Roberto Sabatini,Alessandro Gardi,2023-09-12 Sustainable Aviation Technology and Operations Comprehensively covers research and development initiatives to enhance the environmental sustainability of the aviation sector Sustainable Aviation Technology and Operations provides a comprehensive and timely outlook of recent research advances in aeronautics and air transport with emphasis on both long term sustainable development goals and current achievements This book discusses

some of the most promising advances in aircraft technologies air traffic management and systems engineering methodologies for sustainable aviation The topics covered include propulsion aerodynamics avionics structures materials airspace management biofuels and sustainable lifecycle management The physical processes associated with various aircraft emissions including air pollutants noise and contrails are presented to support the development of computational models for aircraft design flight path optimization and environmental impact assessment Relevant advances in systems engineering and lifecycle management processes are also covered bridging some of the existing gaps between academic research and industry best practices A collection of research case studies complements the book highlighting opportunities for a timely uptake of the most promising technologies towards a more efficient and environmentally sustainable aviation future Key features Contains important research and industry relevant contributions from world class experts Addresses recent advances in aviation sustainability including multidisciplinary design approaches and multi objective operational optimisation methods Includes a number of research case studies addressing propulsion aerostructures alternative aviation fuels avionics air traffic management and sustainable lifecycle management solutions Sustainable Aviation Technology and Operations is an excellent book for aerospace engineers aviation scientists researchers and graduate students involved in the field

Standard Methods for Aerospace Stress Analysis Amir Javidinejad,2025-11-04 Standard Methods for Aerospace Stress Analysis Create safer more reliable planes with this crucial guide Aerospace Stress Analysis is the field of research and engineering that evaluates stresses and strains on aerospace structures By analyzing how different materials and components respond to forces it helps aerospace engineers build for structural integrity and safety Combining mathematical and computational models with experimental techniques it s a crucial component of developing viable aerospace technologies Standard Methods for Aerospace Stress Analysis offers a thorough practical overview of the structural and stress analysis of both principal and secondary aircraft structures It covers both fundamental concepts and advanced computational methods along with key applications With coverage of both interior and exterior structures it s a one stop shop for all major aspects of stress analysis Standard Methods for Aerospace Stress Analysis features Step by step examples for every aircraft section Detailed discussion of methods including Finite Element Analysis An overview of key information on static fatigue damage tolerance buckling and more Standard Methods for Aerospace Stress Analysis is ideal for professional mechanical and aerospace engineers working in the aircraft or space industries as well as students in the field Introduction to Aerospace Engineering with a Flight Test Perspective Stephen Corda,2017-03-20 Comprehensive textbook which introduces the fundamentals of aerospace engineering with a flight test perspective Introduction to Aerospace Engineering with a Flight Test Perspective is an introductory level text in aerospace engineering with a unique flight test perspective Flight test where dreams of aircraft and space vehicles actually take to the sky is the bottom line in the application of aerospace engineering theories and principles Designing and flying the real machines are often the reasons that these theories and principles were

developed This book provides a solid foundation in many of the fundamentals of aerospace engineering while illuminating many aspects of real world flight Fundamental aerospace engineering subjects that are covered include aerodynamics propulsion performance and stability and control Key features Covers aerodynamics propulsion performance and stability and control Includes self contained sections on ground and flight test techniques Includes worked example problems and homework problems Suitable for introductory courses on Aerospace Engineering Excellent resource for courses on flight testing Introduction to Aerospace Engineering with a Flight Test Perspective is essential reading for undergraduate and graduate students in aerospace engineering as well as practitioners in industry It is an exciting and illuminating read for the aviation enthusiast seeking deeper understanding of flying machines and flight test **Computational Modelling and Simulation of Aircraft and the Environment, Volume 2** Dominic J. Diston,2024-02-20 Computational Modelling and Simulation of Aircraft and the Environment An in depth discussion of aircraft dynamics modelling and simulation This book provides a comprehensive guide to modelling and simulation from basic physical and mathematical principles giving the reader sufficient information to be able to build computational models of aircraft for the purposes of simulation and evaluation Highly relevant to practitioners it takes into account the multi disciplinary nature of aerospace products and the integrated nature of the models needed in order to represent them Volume 1 Platform Kinematics and Synthetic Environment focused on the modelling of a synthetic environment in which aircraft operate and its spatial relationship with vehicles that are situated and moving within it This volume focuses on the modelling of aircraft and the interpretation of their flight dynamics Key features Includes chapters on equations of motion fixed wing aerodynamics longitudinal flight and gas turbines as well as an opening chapter that presents an overview of flight modelling and a concluding chapter that presents a number of additional topics such as aircraft structures and embedded systems Serves as both a student text and practitioner reference Follows on from previous Aerospace Series titles offering a complementary view of vehicles and systems from the perspectives of mathematics physics and simulation This book offers a comprehensive guide for senior graduate and postgraduate students of aerospace engineering as well as professional engineers involved in the modelling and simulation of aircraft **Scramjet Propulsion** Dora Musielak,2022-11-21 Scramjet Propulsion Explore the cutting edge of HAP technologies with this comprehensive resource from an international leader in her field Scramjet Propulsion A Practical Introduction delivers a comprehensive treatment of hypersonic air breathing propulsion and its applications The book covers the most up to date hypersonic technologies like endothermic fuels fuel injection and flameholding systems high temperature materials and TPS and offers technological overviews of hypersonic flight platforms like the X 43A X 51A and HiFIRE It is organized around easy to understand explanations of technical challenges and provides extensive references for the information contained within The highly accomplished author provides readers with a fulsome description of the theoretical underpinnings of hypersonic technologies as well as critical design and technology issues affecting hypersonic air breathing

propulsion technologies The book s combination of introductory theory and advanced instruction about individual hypersonic engine components is ideal for students and practitioners in fields as diverse as hypersonic vehicle and propulsion development for missile defense technologies launch aerospaceplanes and civilian transports Over 250 illustrations and tables round out the material Readers will also learn from A thorough introduction to hypersonic flight hypersonic vehicle concepts and a review of fundamental principles in hypersonic air breathing propulsion Explorations of the aerothermodynamics of scramjet engines and the design of scramjet components as well as hypersonic air breathing propulsion combustors and fuels Analyses of dual mode combustion phenomena materials structures and thermal management in hypersonic vehicles and combined cycle propulsion An examination of CFD analysis ground and flight testing and simulation Perfect for researchers and graduate students in aerospace engineering Scramjet Propulsion A Practical Introduction is also an indispensable addition to the libraries of engineers working on hypersonic vehicle development seeking a state of the art resource in one of the most potentially disruptive areas of aerospace research today Space Flight Dynamics Craig A. Kluever,2018-05-29 Thorough coverage of space flight topics with self contained chapters serving a variety of courses in orbital mechanics spacecraft dynamics and astronautics This concise yet comprehensive book on space flight dynamics addresses all phases of a space mission getting to space launch trajectories satellite motion in space orbital motion orbit transfers attitude dynamics and returning from space entry flight mechanics It focuses on orbital mechanics with emphasis on two body motion orbit determination and orbital maneuvers with applications in Earth centered missions and interplanetary missions Space Flight Dynamics presents wide ranging information on a host of topics not always covered in competing books It discusses relative motion entry flight mechanics low thrust transfers rocket propulsion fundamentals attitude dynamics and attitude control The book is filled with illustrated concepts and real world examples drawn from the space industry Additionally the book includes a computational toolbox composed of MATLAB M files for performing space mission analysis Key features Provides practical real world examples illustrating key concepts throughout the book Accompanied by a website containing MATLAB M files for conducting space mission analysis Presents numerous space flight topics absent in competing titles Space Flight Dynamics is a welcome addition to the field ideally suited for upper level undergraduate and graduate students studying aerospace engineering *Design and Development of Aircraft Systems* Allan Seabridge,Ian Moir,2020-04-06 Provides a significant update to the definitive book on aircraft system design This book is written for anyone who wants to understand how industry develops the customer requirement for aircraft into a fully integrated tested and qualified product that is safe to fly and fit for purpose The new edition of Design and Development of Aircraft Systems fully expands its already comprehensive coverage to include both conventional and unmanned systems It also updates all chapters to bring them in line with current design practice and technologies taught in courses at Cranfield Bristol and Loughborough universities in the UK Design and Development of Aircraft Systems 3rd Edition begins with an

introduction to the subject It then introduces readers to the aircraft systems airframe vehicle avionic mission and ground systems Following that comes a chapter on the design and development process Other chapters look at design drivers systems architectures systems integration verification of system requirements practical considerations and configuration control The book finishes with sections that discuss the potential impact of complexity on flight safety key characteristics of aircraft systems and more Provides a holistic view of aircraft system design describing the interactions among subsystems such as fuel navigation flight control and more Substantially updated coverage of systems engineering design drivers systems architectures systems integration modelling of systems practical considerations and systems examples Incorporates essential new material on the regulatory environment for both manned and unmanned systems Discussion of trends towards complex systems automation integration and the potential for an impact on flight safety Design and Development of Aircraft Systems 3rd Edition is an excellent book for aerospace engineers researchers and graduate students involved in the field

Foundations of Space Dynamics Ashish Tewari,2020-12-21 An introduction to orbital mechanics and spacecraft attitude dynamics Foundations of Space Dynamics offers an authoritative text that combines a comprehensive review of both orbital mechanics and dynamics The author a noted expert in the field covers up to date topics including orbital perturbations Lambert s transfer formation flying and gravity gradient stabilization The text provides an introduction to space dynamics in its entirety including important analytical derivations and practical space flight examples Written in an accessible and concise style Foundations of Space Dynamics highlights analytical development and rigor rather than numerical solutions via ready made computer codes To enhance learning the book is filled with helpful tables figures exercises and solved examples This important book Covers space dynamics with a systematic and comprehensive approach Is designed to be a practical text filled with real world examples Contains information on the most current applications Includes up to date topics from orbital perturbations to gravity gradient stabilization Offers a deep understanding of space dynamics often lacking in other textbooks Written for undergraduate and graduate students and professionals in aerospace engineering Foundations of Space Dynamics offers an introduction to the most current information on orbital mechanics and dynamics *Unsteady Aerodynamics* Grigorios Dimitriadis,2023-11-28 Unsteady Aerodynamics A comprehensive overview of unsteady aerodynamics and its applications The study of unsteady aerodynamics goes back a century and has only become more significant as aircraft become increasingly sophisticated fly faster and their structures are lighter and more flexible Progress in the understanding of flow physics computing power and techniques and modelling technologies has led to corresponding progress in unsteady aerodynamics with a wide range of methods currently used to predict the performance of engineering structures under unsteady conditions Unsteady Aerodynamics offers a comprehensive and systematic overview of the application of potential and vortex methods to the subject Beginning with an introduction to the fundamentals of unsteady flow it then discusses the modelling of attached and separated incompressible and compressible flows around two

dimensional and three dimensional bodies The result is an essential resource for design and simulation in aerospace engineering Unsteady Aerodynamics readers will also find MATLAB examples and exercises throughout with codes and solutions on an accompanying website Detailed discussion of most classes of unsteady phenomena including flapping flight transonic flow dynamic stall flow around bluff bodies and more Validation of theoretical and numerical predictions using comparisons to experimental data from the literature Unsteady Aerodynamics is ideal for researchers engineers and advanced students in aerospace engineering **Small Unmanned Fixed-wing Aircraft Design** Andrew J. Keane,András Sóbester,James P. Scanlan,2017-12-04 Small Unmanned Fixed wing Aircraft Design is the essential guide to designing building and testing fixed wing UAVs or drones It deals with aircraft from two to 150 kg in weight and is based on the first hand experiences of the world renowned UAV team at the UK s University of Southampton The book covers both the practical aspects of designing manufacturing and flight testing and outlines and the essential calculations needed to underpin successful designs It describes the entire process of UAV design from requirements definition to configuration layout and sizing through preliminary design and analysis using simple panel codes and spreadsheets to full CFD and FEA models and on to detailed design with parametric CAD tools Its focus is on modest cost approaches that draw heavily on the latest digital design and manufacturing methods including a strong emphasis on utilizing off the shelf components low cost analysis automated geometry modelling and 3D printing It deliberately avoids a deep theoretical coverage of aerodynamics or structural mechanics rather it provides a design team with sufficient insights and guidance to get the essentials undertaken more pragmatically The book contains many all colour illustrations of the dozens of aircraft built by the authors and their students over the last ten years giving much detailed information on what works best It is predominantly aimed at under graduate and MSc level student design and build projects but will be of interest to anyone engaged in the practical problems of getting quite complex unmanned aircraft flying It should also appeal to the more sophisticated aero modeller and those engaged on research based around fixed wing UAVs *Future Propulsion Systems and Energy Sources in Sustainable Aviation* Saeed Farokhi,2020-01-21 A comprehensive review of the science and engineering behind future propulsion systems and energy sources in sustainable aviation Future Propulsion Systems and Energy Sources in Sustainable Aviation is a comprehensive reference that offers a review of the science and engineering principles that underpin the concepts of propulsion systems and energy sources in sustainable air transportation The author a noted expert in the field examines the impact of air transportation on the environment and reviews alternative jet fuels hybrid electric and nuclear propulsion and power He also explores modern propulsion for transonic and supersonic hypersonic aircraft and the impact of propulsion on aircraft design Climate change is the main driver for the new technology development in sustainable air transportation The book contains critical review of gas turbine propulsion and aircraft aerodynamics followed by an insightful presentation of the aviation impact on environment Future fuels and energy sources are introduced in a separate chapter Promising

technologies in propulsion and energy sources are identified leading to pathways to sustainable aviation To facilitate the utility of the subject the book is accompanied by a website that contains illustrations and equation files This important book Contains a comprehensive reference to the science and engineering behind propulsion and power in sustainable air transportation Examines the impact of air transportation on the environment Covers alternative jet fuels and hybrid electric propulsion and power Discusses modern propulsion for transonic supersonic and hypersonic aircraft Examines the impact of propulsion system integration on aircraft design Written for engineers graduate and senior undergraduate students in mechanical and aerospace engineering Future Propulsion Systems and Energy Sources in Sustainable Aviation explores the future of aviation with a guide to sustainable air transportation that includes alternative jet fuels hybrid electric propulsion all electric and nuclear propulsion *Aircraft Control Allocation* Wayne Durham,Kenneth A. Bordignon,Roger Beck,2017-01-17 Aircraft Control Allocation Wayne Durham Virginia Polytechnic Institute and State University USA Kenneth A Bordignon Embry Riddle Aeronautical University USA Roger Beck Dynamic Concepts Inc USA An authoritative work on aircraft control allocation by its pioneers Aircraft Control Allocation addresses the problem of allocating supposed redundant flight controls It provides introductory material on flight dynamics and control to provide the context and then describes in detail the geometry of the problem The book includes a large section on solution methods including Banks method a previously unpublished procedure Generalized inverses are also discussed at length There is an introductory section on linear programming solutions as well as an extensive and comprehensive appendix dedicated to linear programming formulations and solutions Discrete time or frame wise allocation is presented including rate limiting nonlinear data and preferred solutions Key features Written by pioneers in the field of control allocation Comprehensive explanation and discussion of the major control allocation solution methods Extensive treatment of linear programming solutions to control allocation A companion web site contains the code of a MATLAB Simulink flight simulation with modules that incorporate all of the major solution methods Includes examples based on actual aircraft The book is a vital reference for researchers and practitioners working in aircraft control as well as graduate students in aerospace engineering

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