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**Contributions to the Aerodynamic Optimization of a Coaxial Rotor System** - Monica Syal 2008

**New Results in Numerical and Experimental Fluid Mechanics XIII** - Andreas Dillmann 2021

This book offers timely insights into research on numerical and experimental fluid mechanics and aerodynamics, mainly for (but not limited to) aerospace applications. It reports on findings by members of the STAB (German Aerospace Aerodynamics Association) and DGLR (German Society for Aeronautics and Astronautics) and covers both nationally and EC-funded projects. Continuing on the tradition of the previous volumes, the book highlights innovative solutions, promoting translation from fundamental research to industrial applications. It addresses academics and professionals in the field of aeronautics, astronautics, ground transportation, and energy alike.

**Engineering Psychology and Cognitive Ergonomics** - Don Harris 2011-06-27

This book constitutes the refereed proceedings of the 9th International Conference on Engineering Psychology and Cognitive Ergonomics, EPCE 2011, held in Orlando, FL, USA, in July 2011, within the framework of the 14th International Conference on Human-Computer Interaction, HCI 2011, together with 11 other thematically similar conferences. The 67 full papers presented were carefully reviewed and selected from numerous submissions. The papers are organized in topical parts on cognitive and psychological aspects of interaction; cognitive aspects of driving; cognition and the Web; cognition and automation; security and safety; and aerospace and military applications.

**Limits to Action** - J. E. R. Staddon 2013-10-02

Limits to Action: The Allocation of Individual Behavior presents the ideas and methods in the study of how individual organisms allocate their limited time and energy and the consequences of such allocation. The book is a survey of individual resource allocation, emphasizing the relationships of the concepts of utility, reinforcement, and Darwinian fitness. The chapters are arranged beginning with plants and general evolutionary considerations, through animal behavior in nature and laboratory, and ending with human behavior in suburb and institution. Topics discussed include operant conditioning; the principle of diminishing returns; and issues in relation to mating strategies. Biologists, sociologists, economists, and psychologists will find the book interesting.


Issues in Transportation Research and Application: 2013 Edition is a
ScholarlyEditions™ book that delivers timely, authoritative, and comprehensive information about Transport Geography. The editors have built Issues in Transportation Research and Application: 2013 Edition on the vast information databases of ScholarlyNews™. You can expect the information about Transport Geography in this book to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Issues in Transportation Research and Application: 2013 Edition has been produced by the world’s leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at http://www.ScholarlyEditions.com/.

Optimizing Small Multi-Rotor Unmanned Aircraft-Stephen D. Prior 2018-09-18

This design guide was written to capture the author’s practical experience of designing, building and testing multi-rotor drone systems over the past decade. The lack of one single source of useful information meant that the past 10 years has been a steep learning curve, a lot of self-tuition and many trial and error tests. Lessons learnt the hard way are not always the best way to learn. This book will be useful for the amateur drone pilot who wants to build their own system from first principles, as well as the academic researcher investigating novel design concepts and future drone applications.

Wind-tunnel Studies of the Performance of Multirotor Configurations-Richard C. Dingeldein 1954

The power requirements measured in static thrust and in level forward flight are presented for two helicopter rotor configurations. One is a coaxial rotor arrangement having the rotors spaced approximately 19 percent of the rotor radius; the other is a tandem configuration in which the rotor-shaft spacing is 3 percent greater than the rotor diameter and in which the rotors lie in the same plane. The experimental measurements are compared with the results of calculations based on existing NACA single-rotor theory.

Aerodynamics of the Model Airplane-Franz Wilhelm Schmitz 1970

A Survey of Theoretical and Experimental Coaxial Rotor Aerodynamic Research-Colin P. Coleman 1997

Helicopter Theory-Wayne Johnson 2012-03-07

Monumental engineering text covers vertical flight, forward flight, performance, mathematics of rotating systems, rotary wing dynamics and aerodynamics, aeroelasticity, stability and control, stall, noise, and more. 189 illustrations. 1980 edition.

Wind Turbine Aerodynamics and Vorticity-Based Methods-Emmanuel Branlard 2017-04-05

The book introduces the fundamentals of fluid-mechanics, momentum theories, vortex theories and vortex methods necessary for the study of rotors aerodynamics and wind-turbines aerodynamics in particular. Rotor theories are presented in a great level of details at the beginning of the book. These theories include: the blade element theory, the Kutta-Joukowski theory, the momentum theory and the blade element momentum method. A part of the book is dedicated to the description and implementation of vortex methods. The remaining of the book focuses on the study of wind turbine aerodynamics using vortex-theory analyses or vortex-methods. Examples of vortex-theory applications are: optimal rotor design, tip-loss corrections, yaw-models and dynamic inflow models. Historical derivations and recent extensions of the models are presented. The cylindrical vortex model is
another example of a simple analytical vortex model presented in this book. This model leads to the development of different BEM models and it is also used to provide the analytical velocity field upstream of a turbine or a wind farm under aligned or yawed conditions. Different applications of numerical vortex methods are presented. Numerical methods are used for instance to investigate the influence of a wind turbine on the incoming turbulence. Sheared inflows and aero-elastic simulations are investigated using vortex methods for the first time. Many analytical flows are derived in details: vortex rings, vortex cylinders, Hill’s vortex, vortex blobs etc. They are used throughout the book to devise simple rotor models or to validate the implementation of numerical methods. Several Matlab programs are provided to ease some of the most complex implementations.

**Rotorcraft Aeromechanics**-Wayne Johnson 2013-04-29

A rotorcraft is a class of aircraft that uses large-diameter rotating wings to accomplish efficient vertical take-off and landing. The class encompasses helicopters of numerous configurations (single main rotor and tail rotor, tandem rotors, coaxial rotors), tilting proprotor aircraft, compound helicopters, and many other innovative configuration concepts. Aeromechanics covers much of what the rotorcraft engineer needs: performance, loads, vibration, stability, flight dynamics, and noise. These topics include many of the key performance attributes and the often-encountered problems in rotorcraft designs. This comprehensive book presents, in depth, what engineers need to know about modelling rotorcraft aeromechanics. The focus is on analysis, and calculated results are presented to illustrate analysis characteristics and rotor behaviour. The first third of the book is an introduction to rotorcraft aerodynamics, blade motion, and performance. The remainder of the book covers advanced topics in rotary wing aerodynamics and dynamics.

**NASA Heavy Lift Rotorcraft Systems Investigation**- 2005

*A Survey of Theoretical and Experimental Coaxial Rotor Aerodynamic Research*-National Aeronautics and Space Adm Nasa 2018-10-22

The recent appearance of the Kamov Ka-50 helicopter and the application of coaxial rotors to unmanned aerial vehicles have renewed international interest in the coaxial rotor configuration. This report addresses the aerodynamic issues peculiar to coaxial rotors by surveying American, Russian, Japanese, British, and German research. (Herein, 'coaxial rotors' refers to helicopter, not propeller, rotors. The intermeshing rotor system was not investigated.) Issues addressed are separation distance, load sharing between rotors, wake structure, solidity effects, swirl recovery, and the effects of having no tail rotor. A general summary of the coaxial rotor configuration explores the configuration's advantages and applications. Coleman, Colin P. Ames Research Center RTOP 522-31-12; RTOP 522-41-22...

**Rotor Design Optimization Using a Free Wake Analysis**- 1993

*Aeronautical Engineering*- 1971

A selection of annotated references to unclassified reports and journal articles that were introduced into the NASA scientific and technical information system and announced in Scientific and technical aerospace reports (STAR) and International aerospace abstracts (IAA)


The book offers a snapshot of the state-of-art in the field of model-based mechatronic system design. It covers topics including machine design and optimization, predictive systems in manufacturing networks, and the development of software for modeling and simulation of processes, which are
supplemented by practical case studies. The book is a collection of fifteen selected contributions presented during the Workshop on Mechatronic Systems, held on March 17-19, 2014, in Mahdia, Tunisia. The workshop was jointly organized by the Laboratory of Mechanics Modeling and Production (LA2MP) of the National School of Engineers Sfax, Tunisia, and the Laboratory for Mechanical Systems and Materials Engineering (LISMMA) of Higher Institute of Mechanics (SUPMECA), Paris, France.


This book is a compilation of peer-reviewed papers from the 2018 Asia-Pacific International Symposium on Aerospace Technology (APISAT 2018). The symposium is a common endeavour between the four national aerospace societies in China, Australia, Korea and Japan, namely, the Chinese Society of Aeronautics and Astronautics (CSAA), Royal Aeronautical Society Australian Division (RAeS Australian Division), the Korean Society for Aeronautical and Space Sciences (KSAS) and the Japan Society for Aeronautical and Space Sciences (JSASS). APISAT is an annual event initiated in 2009 to provide an opportunity for researchers and engineers from Asia-Pacific countries to discuss current and future advanced topics in aeronautical and space engineering.

Fluid Dynamics in Physics, Engineering and Environmental Applications-Jaime Klapp 2012-10-14

The book contains invited lectures and selected contributions presented at the Enzo Levi and XVII Annual Meeting of the Fluid Dynamic Division of the Mexican Physical Society in 2011. It is aimed to fourth year undergraduate and graduate students, and scientists in the field of physics, engineering and chemistry that have interest in Fluid Dynamics from the experimental and theoretical point of view. The invited lectures are introductory and avoid the use of complicate mathematics. The other selected contributions are also adequate to fourth year undergraduate and graduate students. The Fluid Dynamics applications include multiphase flow, convection, diffusion, heat transfer, rheology, granular material, viscous flow, porous media flow, geophysics and astrophysics. The material contained in the book includes recent advances in experimental and theoretical fluid dynamics and is adequate for both teaching and research.


Written by an internationally recognized teacher and researcher, this book provides a thorough, modern treatment of the aerodynamic principles of helicopters and other rotating-wing vertical lift aircraft such as tilt rotors and autogiros. The text begins with a unique technical history of helicopter flight, and then covers basic methods of rotor aerodynamic analysis, and related issues associated with the performance of the helicopter and its aerodynamic design. It goes on to cover more advanced topics in helicopter aerodynamics, including airfoil flows, unsteady aerodynamics, dynamic stall, and rotor wakes, and rotor-airframe aerodynamic interactions, with final chapters on autogiros and advanced methods of helicopter aerodynamic analysis. Extensively illustrated throughout, each chapter includes a set of homework problems. Advanced undergraduate and graduate students, practising engineers, and researchers will welcome this thoroughly revised and updated text on rotating-wing aerodynamics.

Wind Energy Explained-James F. Manwell 2010-09-14

Wind energy’s bestselling textbook- fully revised. This must-have second edition includes up-to-date data, diagrams, illustrations and thorough new material on: the fundamentals of wind turbine
aerodynamics; wind turbine testing and modelling; wind turbine design standards; offshore wind energy; special purpose applications, such as energy storage and fuel production. Fifty additional homework problems and a new appendix on data processing make this comprehensive edition perfect for engineering students. This book offers a complete examination of one of the most promising sources of renewable energy and is a great introduction to this cross-disciplinary field for practising engineers. “provides a wealth of information and is an excellent reference book for people interested in the subject of wind energy.” (IEEE Power & Energy Magazine, November/December 2003) “deserves a place in the library of every university and college where renewable energy is taught.” (The International Journal of Electrical Engineering Education, Vol.41, No.2 April 2004) “a very comprehensive and well-organized treatment of the current status of wind power.” (Choice, Vol. 40, No. 4, December 2002)

International Aerospace Abstracts- 1998


The God Machine-James R. Chiles 2008-11-26

From transforming the ways of war to offering godlike views of inaccessible spots, revolutionizing rescues worldwide, and providing some of our most-watched TV moments—including the cloud of newscopters that trailed O. J. Simpson’s Bronco—the helicopter is far more capable than early inventors expected. Now James Chiles profiles the many helicoptrians who contributed to the development of this amazing machine, and pays tribute to the selfless heroism of pilots and crews. A virtual flying lesson and scientific adventure tale, The God Machine is more than the history of an invention; it is a journey into the minds of imaginative thinkers and a fascinating look at the ways they changed our world.

Aeronautical Engineering: A Cumulative Index to a Continuing Bibliography (supplement 312)- 1994

Monthly Catalogue, United States Public Documents- 1995


This book gathers the best articles presented by researchers and industrial experts at the International Conference on “Innovative Design and Development Practices in Aerospace and Automotive Engineering (I-DAD 2018)”. The papers discuss new design concepts, analysis and manufacturing technologies, with an emphasis on achieving improved performance by downsizing; improving the weight-to-strength ratio, fuel efficiency, and operational capability at room and elevated temperatures; reducing wear and tear; and addressing NVH aspects, while balancing the challenges of Euro IV/Barat Stage IV emission norms and beyond, greenhouse effects, and recyclable materials. The innovative methods discussed here offer valuable reference material for educational and research organizations, as well as industry, encouraging them to pursue challenging projects of mutual interest.


The Elements of Aerofoil and Airscrew Theory-H. Glauert 1983-06-09

More than half a century has elapsed since the first edition of The Elements of Aerofoil and Airscrew Theory appeared in 1926, a period in which massive advances have been made in the understanding and description of aerodynamic phenomena. Yet Glauert was an acknowledged master of his subject and his book remains the most lucid and best
organised introduction to the fundamental principles of aerodynamics that has ever been written. This new paperback edition reprints the text of the second edition of 1947, with supplementary notes by H. B. Squire.

Advanced Technologies, Systems, and Applications II-Mirsad Hadžikadić 2018-01-30

This book presents innovative and interdisciplinary applications of advanced technologies. It includes the scientific outcomes of the 9th DAYS OF BHAAAS (Bosnian-Herzegovinian American Academy of Arts and Sciences) held in Banja Vrućica, Teslić, Bosnia and Herzegovina on May 25–28, 2017. This unique book offers a comprehensive, multidisciplinary and interdisciplinary overview of the latest developments in a broad section of technologies and methodologies, viewed through the prism of applications in computing, networking, information technology, robotics, complex systems, communications, energy, mechanical engineering, economics and medicine, to name just a few.

Helicopter Performance-Donald M. Layton 1984

High Angle of Attack Aerodynamics-Josef Rom 2012-12-06

The aerodynamics of aircraft at high angles of attack is a subject which is being pursued diligently, because the modern agile fighter aircraft and many of the current generation of missiles must perform well at very high incidence, near and beyond stall. However, a comprehensive presentation of the methods and results applicable to the studies of the complex aerodynamics at high angle of attack has not been covered in monographs or textbooks. This book is not the usual textbook in that it goes beyond just presenting the basic theoretical and experimental know-how, since it contains reference material to practical calculation methods and technical and experimental results which can be useful to the practicing aerospace engineers and scientists. It can certainly be used as a text and reference book for graduate courses on subjects related to high angles of attack aerodynamics and for topics related to three-dimensional separation in viscous flow courses. In addition, the book is addressed to the aerodynamicist interested in a comprehensive reference to methods of analysis and computations of high angle of attack flow phenomena and is written for the aerospace scientist and engineer who is familiar with the basic concepts of viscous and inviscid flows and with computational methods used in fluid dynamics.

MARE-WINT-Wieslaw Ostachowicz 2016-08-30

This book provides a holistic, interdisciplinary overview of offshore wind energy, and is a must-read for advanced researchers. Topics, from the design and analysis of future turbines, to the decommissioning of wind farms, are covered. The scope of the work ranges from analytical, numerical and experimental advancements in structural and fluid mechanics, to novel developments in risk, safety & reliability engineering for offshore wind. The core objective of the current work is to make offshore wind energy more competitive, by improving the reliability, and operations and maintenance (O&M) strategies of wind turbines. The research was carried out under the auspices of the EU-funded project, MARE-WINT. The project provided a unique opportunity for a group of researchers to work closely together, undergo multidisciplinary doctoral training, and conduct research in the area of offshore wind energy generation. Contributions from expert, external authors are also included, and the complete work seeks to bridge the gap between research and a rapidly-evolving industry.


With the rapid development of Machinery, Materials Science and Engineering
Application, discussion on new ideas related mechanical engineering and materials science arise. In this proceedings volume the author(s) are focussed on Machinery, Materials Science and Engineering Applications and other related topics. The Conference has pro

Helicopter Flight Dynamics-Gareth D. Padfield 2008-04-15

The behaviour of helicopters is so complex that understanding the physical mechanisms at work in trim, stability and response, and thus the prediction of Flying Qualities, requires a framework of analytical and numerical modelling and simulation. Good Flying Qualities are vital for ensuring that mission performance is achievable with safety and, in the first edition of Helicopter Flight Dynamics, a comprehensive treatment of design criteria was presented. In this second edition, the author complements this with a new Chapter on Degraded Flying Qualities, drawing examples from flight in poor visibility, failure of control functions and encounters with severe atmospheric disturbances. Fully embracing the consequences of Degraded Flying Qualities during the design phase will contribute positively to safety. The accurate prediction and assessment of Flying Qualities draws on the modelling and simulation discipline on the one hand and testing methodologies on the other. Checking predictions in flight requires clearly defined ‘mission-task-elements’, derived from missions with realistic performance requirements. High fidelity simulations also form the basis for the design of stability and control augmentation systems, essential for conferring Level 1 Flying Qualities. The integrated description of flight dynamic modelling, simulation and flying qualities forms the subject of this book, which will be of interest to engineers in research laboratories and manufacturing industry, test pilots and flight test engineers, and as a reference for graduate and postgraduate students in aerospace engineering. The Author Gareth Padfield, a Fellow of the Royal Aeronautical Society, is the Bibby Professor of Aerospace Engineering at the University of Liverpool. He is an aeronautical engineer by training and has spent his career to date researching the theory and practice of flight for both fixed-wing aeroplanes and rotorcraft. During his years with the UK’s Royal Aircraft Establishment and Defence Evaluation and Research Agency, he conducted research into rotorcraft dynamics, handling qualities and flight control. His work has involved a mix of flight testing, creating and testing simulation models and developing analytic approximations to describe flight behaviour and handling qualities. Much of his research has been conducted in the context of international collaboration - with the Technical Co-operation Programme, AGARD and GARTEUR as well as more informal collaborations with industry, universities and research centres worldwide. He is very aware that many accomplishments, including this book, could not have been achieved without the global networking that aerospace research affords. During the last 8 years as an academic, the author has continued to develop his knowledge and understanding in flight dynamics, not only through research, but also through teaching the subject at undergraduate level; an experience that affords a new and deeper kind of learning that, hopefully, readers of this book will benefit from.


Aerodynamics of Wind Turbines is the established essential text for the fundamental solutions to efficient wind turbine design. Now in its second edition, it has been entirely updated and substantially extended to reflect advances in technology, research into rotor aerodynamics and the structural response of the wind turbine structure. Topics covered include increasing mass flow through the turbine, performance at low and high wind speeds, assessment of the extreme conditions under which the turbine will perform and the theory for
calculating the lifetime of the turbine. The classical Blade Element Momentum method is also covered, as are eigenmodes and the dynamic behaviour of a turbine. The new material includes a description of the effects of the dynamics and how this can be modelled in an ?aeroelastic code?, which is widely used in the design and verification of modern wind turbines. Further, the description of how to calculate the vibration of the whole construction, as well as the time varying loads, has been substantially updated.

**Hovering Measurements for Twin-rotor Configurations with and Without Overlap**

George E. Sweet 1960

This book introduces the topics most relevant to autonomously flying flapping wing robots: flapping-wing design, aerodynamics, and artificial intelligence. Readers can explore these topics in the context of the "Delfly", a flapping wing robot designed at Delft University in The Netherlands. How are tiny fruit flies able to lift their weight, avoid obstacles and predators, and find food or shelter? The first step in emulating this is the creation of a micro flapping wing robot that flies by itself. The challenges are considerable: the design and aerodynamics of flapping wings are still active areas of scientific research, whilst artificial intelligence is subject to extreme limitations deriving from the few sensors and minimal processing onboard. This book conveys the essential insights that lie behind success such as the DelFly Micro and the DelFly Explorer. The DelFly Micro, with its 3.07 grams and 10 cm wing span, is still the smallest flapping wing MAV in the world carrying a camera, whilst the DelFly Explorer is the world's first flapping wing MAV that is able to fly completely autonomously in unknown environments. The DelFly project started in 2005 and ever since has served as inspiration, not only to many scientific flapping wing studies, but also the design of flapping wing toys. The combination of introductions to relevant fields, practical insights and scientific experiments from the DelFly project make this book a must-read for all flapping wing enthusiasts, be they students, researchers, or engineers.

**The DelFly**

G.C.H.E. de Croon 2015-11-26

**Aeronautical Engineering: A Cumulative Index to a Continuing Bibliography (supplement 300)**

- 1994

**Experimental Investigation of Advanced Hub and Pylon Fairing Configurations to Reduce Helicopter Drag**

D. M. Martin 1993