

Missile Aerodynamics Mcgraw Hill Series In Missile And Space Technology

Three missile body shapes tested at Mach numbers of 1.50, 2.16, and 2.86 with angles of attack up to 30 degrees are described. The flow characteristics for each body shape are examined. The measured aerodynamic forces and moments are presented. The use of flow visualization techniques are described and the results such as vortex effects are discussed.

This book unifies all aspects of flight dynamics for the efficient development of aerospace vehicle simulations. It provides the reader with a complete set of tools to build, program, and execute simulations. Unlike other books, it uses tensors for modeling flight dynamics in a form invariant under coordinate transformations. For implementation, the tensors are converted to matrices, resulting in compact computer code. The reader can pick templates of missiles, aircraft, or hypersonic vehicles to jump-start a particular application. It is the only textbook that combines the theory of modeling with hands-on examples of three-, five-, and six-degree-of-freedom simulations. Included is a link to the CADAC Web Site where you may apply for the free CADAC CD with eight prototype simulations and plotting programs. Amply illustrated with 318 figures and 44 examples, the text can be used for advanced undergraduate and graduate instruction or for self-study. Also included are 77 problems that enhance the ability to model aerospace vehicles and nine projects that hone the skills for developing three-, five-, and six-degree-of-freedom simulations.

Wind Tunnels and Experimental Fluid Dynamics Research

Tactical Missile Aerodynamics

NIST Special Publication

Missile Flight Simulation

Tactical Missile Aerodynamics: General topics

Includes Part 1, Number 1 & 2: Books and Pamphlets, Including Serials and Contributions to Periodicals (January - December)

The theoretical and experimental determinations of the aerodynamic coefficients of the RFD-2 re-entry vehicle are presented. The resulting coefficients are incorporated into an aerodynamic analysis of the re-entry trajectory where the changes of configuration and the resultant changes in the physical and aerodynamic parameters of the vehicle are considered. Radar and camera-tracking data were obtained from the flight test which took place October 9, 1964. These experimental trajectory data correlated with the calculated trajectory within 400 feet of distance or 1 second of flight time throughout the re-entry flight.

Formulas for Dynamics, Acoustics and Vibration

Engineering Design Handbook

General Topics

Flight Mechanics

NBS Special Publication

A treatment of low-speed aerodynamics, covering both theory and computational techniques, first published in 2001.

Proven techniques for deriving the basic aerodynamic properties of axisymmetric-shaped bodies with the minimum amount of time and effort Aerodynamics of Missiles and Rockets describes the basic aerodynamics model used in the widespread Analytical Initial Missile Synthesis (AIMS) computer code for symmetric missile and rocket sizing and design. It is a collection of empirical, semi-empirical and theoretical aerodynamics engineering methods for a component build-up approach to aerodynamics prediction. This book serves as an on-the-job application manual and desk reference for the prediction of basic aerodynamics. It can also be used for courses in applied aerodynamics in Mechanical and Aerospace Engineering programs and for short courses in industry and government. This practical guide provides an alternative approach to utilizing numerous, complex, stand-alone computer codes, but is also a good complement to these codes. The book offers insight into the methods and techniques used to derive answers and correct magnitudes generated by code, giving confidence in final results. Features a Microsoft Excel file that automates calculations and provides complete tabulated output for missile and rocket geometry and design, and design and for rapid assessments of aerodynamic properties based on changes in geometry or flight conditions On-the-job application manual and desk reference for the prediction of basic aerodynamics Combination of long-standing, empirical and semi-empirical techniques with classical aerodynamic theory A component build-up approach utilized, with body and wing/tail surface aerodynamics determined separately and then combined for total configuration zero-lift drag, lift, center of pressure location, and pitching moment Ram Accelerators

Low-Speed Aerodynamics

Aerodynamics of Missiles and Rockets

Missile Aerodynamics

Engineering Analysis of Flight Vehicles

Classic text analyzes trajectories of aircraft, missiles, satellites, and spaceships in terms of gravitational forces, aerodynamic forces, and thrust. Topics include general principles of kinematics, dynamics, aerodynamics, propulsion; quasi-steady and non-steady flight; and applications. 1962 edition.

Written by an expert with more than 30 years of experience, Guidance of Unmanned Aerial Vehicles contains new analytical results, taken from the author's research, which can be used for analysis and design of unmanned aerial vehicles guidance and control

systems. This book progresses from a clear elucidation of guidance laws and unmanned aerial vehicle dynamics to the modeling of their guidance and control systems. Special attention is paid to guidance of autonomous UAVs, which differs from traditional missile guidance. The author explains UAV applications, contrasting them to a missile's limited ability (or inability) to control axial acceleration. The discussion of guidance laws for UAVs presents a generalization of missile guidance laws developed by the author. The computational algorithms behind these laws are tested in three applications—for the surveillance problem, the refueling problem, and for the motion control of a swarm of UAVs. The procedure of choosing and testing the guidance laws is also considered in an example of future generation of airborne interceptors launched from UAVs. The author provides an innovative presentation of the theoretical aspects of unmanned aerial vehicles' guidance that cannot be found in any other book. It presents new ideas that, once crystallized, can be implemented in the new generation of unmanned aerial systems.

Air and Missile Defense Systems Engineering

Analytic Methods in Aircraft Aerodynamics

Modeling and Simulation of Aerospace Vehicle Dynamics

NASA Technical Note

Effects of Magnus Moments on Missile Aerodynamic Performance

This two-volume set includes discussions of the physics of the fluid mechanics phenomena associated with tactical missile flight and the full range of prediction methods required to analyze current and future missiles. It's a valuable resource for missile aerodynamicists, designers, and researchers.

The book "Wind Tunnels and Experimental Fluid Dynamics Research" is comprised of 33 chapters divided in five sections. The first 12 chapters discuss wind tunnel facilities and experiments in incompressible flow, while the next seven chapters deal with building dynamics, flow control and fluid mechanics. Third section of the book is dedicated to chapters discussing aerodynamic field measurements and real full scale analysis (chapters 20-22). Chapters in the last two sections deal with turbulent structure analysis (chapters 23-25) and wind tunnels in compressible flow (chapters 26-33). Contributions from a large number of international experts make this publication a highly valuable resource in wind tunnels and fluid dynamics field of research.

Dynamics of Atmospheric Flight

Guide to the Literature of Engineering, Mathematics, and the Physical Sciences

Prototype Design and Successful First Launch

Air Force Magazine

A Bibliography with Contents Noted

Ram accelerators are among the most advanced tools for generating fluid dynamcis data in supersonic reacting systems. They require the combined action of combustion, wave systems and turbulence and are still a serious challenge for physicists and engineers. This book will serve as an introductory textbook on ram accelerators and gives a thorough overview on research activities, performance modeling and high-pressure detonation dynamics.

Mechanical engineering, an engineering discipline born of the needs of the industrial revolution, is once again asked to do its substantial share in the call for industrial renewal. The general call is urgent as we face profound issues of productivity and competitiveness that require engineering solutions, among others. The Mechanical Engineering Series is a series featuring graduate texts and research monographs intended to address the need for information in contemporary areas of mechanical engineering. The series is conceived as a comprehensive one that covers a broad range of concentrations important to mechanical engineering graduate education and research. We are fortunate to have a distinguished roster of consulting editors, each an expert in one of the areas of concentration. The names of the consulting editors are listed on the following page of this volume. The areas of concentration are applied mechanics, biomechanics, computational mechanics, dynamic systems and control, energetics, mechanics of materials, processing, thermal science, and tribology. Professor Winer, the consulting editor for tribology, and I are pleased to present this volume of the series: Laminar Viscous Flow, by Professor Constantinescu. The selection of this volume underscores again the interest of the Mechanical Engineering Series to provide our readers with topical monographs as well as graduate texts.

An Empirical Method for Determining Static Distributed Aerodynamic Loads on Axisymmetric Multistage Launch Vehicles

Charles E. Watkins, Donald L. Lansing and Frederick W. Gibosn

Theory of Flight Paths

Proceedings of the Third International Workshop on Ram Accelerators Held in Sendai, Japan, 16–18 July 1997

Ballistic Missile Series : Aerodynamics

Air and Missile Defense Systems Engineering fills a need for those seeking insight into the design procedures of the air and missile defense system engineering process. Specifically aimed at policy planners, engineers, researchers, and consultants, it presents a balanced approach to negating a target in both natural and electronic attack environmen

This book discusses aircraft flight performance, focusing on commercial aircraft but also considering examples of high-performance military aircraft. The framework is a multidisciplinary engineering analysis, fully supported by flight simulation, with software validation at several levels. The book covers topics such as geometrical configurations, configuration aerodynamics and determination of aerodynamic derivatives, weight engineering, propulsion systems (gas turbine engines and propellers), aircraft trim, flight envelopes, mission analysis, trajectory optimisation, aircraft noise, noise trajectories and analysis of environmental performance. A unique feature of this book is the discussion and analysis of the environmental performance of the aircraft, focusing on topics such as aircraft noise and carbon dioxide emissions.

Space Science and Technology Books, 1957-1961

Laminar Viscous Flow

Guide to Instrumentation Literature

Catalog of Copyright Entries. Third Series

Guidance of Unmanned Aerial Vehicles

With Over 60 tables, most with graphic illustration, and over 1000 formulas, Formulas for Dynamics, Acoustics, and Vibration will provide an invaluable time-saving source of concise solutions for mechanical, civil, nuclear, petrochemical and aerospace engineers and designers. Marine engineers and service engineers will also find it useful for diagnosing their machines that can slosh, rattle, whistle, vibrate, and crack under dynamic loads.

Excellent graduate-level text explores virtually every important subject in the fields of subsonic, transonic, supersonic, and hypersonic aerodynamics and dynamics, demonstrating their interface in atmospheric flight vehicle design. 1974 edition.

The Rocket Electric Field Sounding (REFS) Program

A Use of Conformal Mapping to Determine the Apparent Additional Mass of Scalloped And/or Clustered Cylinder Configurations with Experimental Evaluations of Results
Aerodynamics

Investigation of Flow Characteristics Over Missile Bodies at Supersonic Speeds

Miscellaneous Publication - National Bureau of Standards

Geared toward upper-level undergraduates, graduate students, and professionals, this text concerns the dynamics of atmospheric flight, with focus on airplane stability and control. An extensive set of numerical examples covers STOL airplanes, subsonic jet transports, hypersonic flight, stability augmentation, and wind and density gradients. 260 illustrations .1972 edition.

The Publishers' Trade List Annual

1960

Advanced Aircraft Flight Performance

Stability Analysis of the RFD-2 Flight Test Vehicle

NASA technical note