F1 Rocket Engine

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Stages to Saturn Bloomsbury Publishing
Most lifting bodies, or "flying bathtubs" as they were called, were so ugly only an engineer could love them, and yet, what an elegant way to keep wings from burning off in supersonic flight between earth and orbit. Working in their spare time (because they couldn't initially get official permission), Dale Reed and his team of engineers demonstrated the potential of the design that led to the Space Shuttle. Wingless Flight takes us behind the scenes with just the right blend of technical information and fascinating detail (the crash of M2-F2 found new life as the opening credit for TV's "The Six Million Dollar Man"). The flying bathtub, itself, is finding new life as the proposed escape-pod for the Space Station.
The Secret Horsepower Race: Western Front Fighter Engine Development - Special Edition Merlin Cambridge University Press
Class-tested and coherent, this textbook teaches classical and web information retrieval, including web search and the related areas of text classification and text clustering from basic concepts. It gives an up-to-date treatment of all aspects of the design and implementation of systems for gathering, indexing, and searching documents; methods for evaluating systems; and an introduction to the use of machine learning methods on text collections. All the important ideas are explained using examples and figures, making it perfect for introductory courses in information retrieval for advanced undergraduates and graduate students in computer science. Based on feedback from extensive classroom experience, the book has been carefully structured in order to make teaching more natural and effective. Slides and additional exercises (with solutions for lecturers) are also available through the book's supporting website to help course instructors prepare their lectures.
Remembering the Giants HarperTempest
Exploring these early years of aviation, Joseph Corn describes the fascinating, and often bizarre, plans for the future of manned flight and brings back to life the famous and lesser-known aviators who became American heroes.
Fundamentals of Rocket Propulsion Springer
The solution of problems of combustion instability for more effective communication between the various workers in this field is considered. The extent of combustion instability problems in liquid propellant rocket engines and recommendations for their solution are discussed. The most significant developments, both theoretical and experimental, are presented, with emphasis on fundamental principles and relationships between alternative approaches.
History of Liquid Propellant Rocket Engines AIAA
Orbital Mechanics for Engineering Students, Second Edition, provides an introduction to the basic concepts of space mechanics. These include vector kinematics in three dimensions; Newton ' s laws of motion and gravitation; relative motion; the vector-based solution of the classical two-body problem; derivation of Kepler ' s equations; orbits in three dimensions; preliminary orbit determination; and orbital maneuvers. The book also covers relative motion and the two-impulse rendezvous problem; interplanetary mission design using patched conics; rigid-body dynamics used to characterize the attitude of a space vehicle; satellite attitude dynamics; and the characteristics and design of multi-stage launch vehicles. Each chapter begins with an outline of key concepts and concludes with problems that are based on the material covered. This text is written for undergraduates who are studying orbital mechanics for the first time and have completed courses in physics, dynamics, and mathematics, including differential equations and applied linear algebra. Graduate students, researchers, and experienced practitioners will also find useful review materials in the book. NEW: Reorganized and improved discusions of coordinate systems, new discussion on perturbations and quarternions NEW: Increased coverage of attitude dynamics, including new Matlab algorithms and examples in chapter 10 New examples and homework problems
Fluidic Nozzle Throats in Solid Rocket Motors DIANE Publishing
The book follows a unified approach to present the basic principles of rocket propulsion in concise and lucid form. This textbook comprises of ten chapters ranging from brief introduction and elements of rocket propulsion, aerothermodynamics to solid, liquid and hybrid propellant rocket engines with chapter on electrical propulsion. Worked out examples are also provided at the end of chapter for understanding uncertainty analysis. This book is designed and developed as an introductory text on the fundamental aspects of rocket propulsion for both undergraduate and graduate students. It is also aimed towards practicing engineers in the field of space engineering. This comprehensive guide also provides adequate problems for audience to understand intricate aspects of rocket propulsion enabling them to design and develop rocket engines for peaceful purposes.
Fundamentals of Aircraft and Rocket Propulsion Elsevier
This book focuses on the performance and application of fluidic nozzle throats for solid rocket motors, discussing their flow details and characterization performance, as well as the influence of the particle phase on their performance. It comprehensively covers a range of fluidic nozzle throats in solid rocket motors and is richly illustrated with impressive figures and full-color photographs. It is a valuable resource for students and researchers in the fields of aeronautics, astronautics and related industries wishing to understand the fundamentals and theories of fluidic nozzle throats and engage in fluidic nozzle throat analysis and design.
Taming Liquid Hydrogen CRC Press
Science fiction roman.
Rocket and Spacecraft Propulsion Springer
The book received the Emme Award for Astronautical Literature at the March 20 2000 luncheon of the Goddard Memorial Symposium, sponsored by the American Astronautical Society. Named in honor of the first NASA Historian, Eugene Emme, the Emme award was created in 1982 to annually recognize an outstanding book that increases public understanding of the past and potential impact of the field of astronautics.
Wingless Flight AIAA (American Institute of Aeronautics & Astronautics)
The revised edition of this practical, hands-on book discusses the launch vehicles in use today throughout the world, and includes the latest details on advanced systems being developed, such as electric and nuclear propulsion. The author covers the fundamentals, from the basic principles of rocket propulsion and vehicle dynamics through the theory and practice of liquid and solid propellant motors, to new and future developments. He provides a serious exposition of the principles and practice of rocket propulsion, from the point of view of the user who is not an engineering specialist.
Challenge to Apollo University Press of Kentucky
Book & DVD. Saturn V was the largest, most powerful rocket ever produced. Developed in the 1960s, in response to President Kennedy's call for a moon landing by the end of the decade, it rose from the drawing board to flight vehicle in record time. The rocket was masterminded by Wernher Von Braun and did not fail in any of its flights. The story of the moon missions is well known with many books and films on the subject. Little has been written on the Saturn V rocket and next to nothing on the development, manufacturing and testing of the rocket stages. In this book, for the first time ever, the detailed story of the history of each Saturn V stage is presented. This includes the 45 flight stages built and all of the various test stages. Most of the stages ended up being launched. Some are in museums, some were destroyed on the ground and some are so obscure they are detailed for the first time in this book. The book traces each stage from the start of manufacturing, through assembly, testing, static firing and transport to the Kennedy Space Center. Facilities across the US were used to manufacture and test the hardware at a pace demanded by the Kennedy pronouncement. Engines were built by Rocketdyne and the rocket stages by Boeing, North American Aviation and the Douglas Company. Testing took place in Santa Susana, Sacramento, Mississippi and other facilities around the country. There were many problems along the way and all are covered in a detail never published before. Stages blew up, materials disintegrated, engines exploded. The development of the F1 and J2 rocket engines is covered as well as details of all the major manufacturing and testing facilities. Throughout, unprecedented details of dates, times, events and parameters are presented. Other unique aspects include: Details of the history of each and every engine on each stage including a log of engine allocation; Details of the transportation of each stage and engine by various means such as truck, barge, boat, super Guppy aircraft including a unique log of these trips; Details of every firing including timelines, test stands, problems, performance details plus logs of each firing on each stage. To supplement the book many photographs that have never been published before have been obtained and appear for the first time. The location of the remaining hardware is identified with photographs of the museum pieces. Research for the book has taken over two years and included unique access to all the major facilities and NASA history offices and libraries. Information has been obtained from Saturn veterans and also through the Freedom of Information Act. In summary this book has the first ever comprehensive presentation of the complete Saturn stage and engines activities from the early 1960s to the conclusion of the program in the mid 1970s. The bonus DVD includes rare Saturn V construction film footage.
Liquid Rocket Valve Components JHU Press
This book puts the reader in the pilot's seat for a "day at the office" unlike any other. The Smell of Kerosene tells the dramatic story of a NASA research pilot who logged over 11,000 flight hours in more than 125 types of aircraft. Donald Mallick gives the reader fascinating first-hand description of his early naval flight training, carrier operations, and his research flying career with NASA. After transferring to the NASA Flight Research Center, Mallick became involved with projects that further pushed the boundaries of aerospace technology. These included the giant delta-winged XB-70 supersonic airplane, the wingless M2-F1 lifting body vehicle, and triple-sonic YF-12 Blackbird. Mallick also test flew the Lunar Landing Research Vehicle and helped develop techniques used in training astronauts to land on the Moon.
Chemical Rocket Propulsion Prentice Hall
This book provides a comprehensive basics-to-advanced course in an aero-thermal science vital to the design of engines for either type of craft. The text classifies engines powering aircraft and single/multi-stage rockets, and derives performance parameters for both from basic aerodynamics and thermodynamics laws. Each type of engine is analyzed for optimum performance goals, and mission-appropriate engines selection is explained. Fundamentals of Aircraft and Rocket Propulsion provides information about and analyses of: thermodynamic cycles of shaft engines (piston, turboprop, turboshaft and propfan); jet engines (pulsejet, pulse detonation engine, ramjet, scramjet, turbojet and turbofan); chemical and non-chemical rocket engines; conceptual design of modular rocket engines (combustor, nozzle and turbopumps); and conceptual design of different modules of aero-engines in their design and off-design state. Aimed at graduate and final-year undergraduate students, this textbook provides a thorough grounding in the history and classification of both aircraft and rocket engines, important design features of all the engines detailed, and particular consideration of special aircraft such as unmanned aerial and short/vertical takeoff and landing aircraft. End-of-chapter exercises make this a valuable student resource, and the provision of a downloadable solutions manual will be of further benefit for course instructors.
Elements of Gas Turbine Propulsion Springer
Long before the NASA was the throes of planning for the Apollo voyages to the Moon, many people had seen the need for a vehicle that could access space routinely. The idea of a reusable space shuttle dates at least to the theoretical rocketplane studies of the 1930s, but by the 1950s it had become an integral part of a master plan for space exploration. The goal of efficient access to space in a heavy-lift booster prompted NASA's commitment to the space shuttle as the vehicle to continue human space flight. By the mid-1960s, NASA engineers concluded that the necessary technology was within reach to enable the creation of a reusable winged space vehicle that could haul scientific and applications satellites of all types into orbit for all users. President Richard M. Nixon approved the effort to build the shuttle in 1972 and the first orbital flight took place in 1981. Although the development program was risky, a talented group of scientists and engineers worked to create this unique space vehicle and their efforts were largely successful. Since 1981, the various orbiters -Atlantis, Columbia, Discovery, Endeavour, and Challenger (lost in 1986 during the only Space Shuttle accident)- have made early 100 flights into space. Through 1998, the space shuttle has carried more than 800 major scientific and technological payloads into orbit and its astronaut crews have conducted more than 50 extravehicular activities, including repairing satellites and the initial building of the International Space Station. The shuttle remains the only vehicle in the world with the dual ability to deliver and return large payloads to and from orbit, and is also the world's most reliable launch system. The design, now almost three decades old, is still state-of-the-art in many areas, including computerized flight control, airframe design, electrical power systems, thermal protection system, and main engines. This significant new study of the decision to build the space shuttle explains the shuttle's origin and early development. In addition to internal NASA discussions, this work details the debates in the late 1960s and early 1970s among policymakers in Congress, the Air Force, and the Office of Management and Budget over the roles and technical designs of the shuttle. Examining the interplay of these organizations with sometimes conflicting goals, the author not only explains how the world's premier space launch vehicle came into being, but also how politics can interact with science, technology, national security, and economics in national government.
Introduction to Rocket Science and Engineering U. S. National Aeronautics & Space Administration
This text provides an introduction to gas turbine engines and jet propulsion for aerospace or

mechanical engineers. The text is divided into four parts: introduction to aircraft propulsion; basic concepts and one-dimensional/gas dynamics; parametric (design point) and performance (off-design) analysis of air breathing propulsion systems; and analysis and design of major gas turbine engine components (fans, compressors, turbines, inlets, nozzles, main burners, and afterburners). Design concepts are introduced early (aircraft performance in introductory chapter) and integrated throughout. Written with extensive student input on the design of the book, the book builds upon definitions and gradually develops the thermodynamics, gas dynamics, and gas turbine engine principles.

Saturn V Harper Voyager

A rich visual history of real and fictional space stations, illustrating pop culture's influence on the development of actual space stations and vice versa Space stations represent both the summit of space technology and, possibly, the future of humanity beyond Earth. Space Stations: The Art, Science, and Reality of Working in Space takes the reader deep into the heart of past, present, and future space stations, both real ones and those dreamed up in popular culture. This lavishly illustrated book explains the development of space stations from the earliest fictional visions through historical and current programs--including Skylab, Mir, and the International Space Station--and on to the dawning possibilities of large-scale space colonization. Engrossing narrative and striking images explore not only the spacecraft themselves but also how humans experience life aboard them, addressing everything from the development of efficient meal preparation methods to experiments in space-based botany. The book examines cutting-edge developments in government and commercial space stations, including NASA's Deep Space Habitats, the Russian Orbital Technologies Commercial Space Station, and China's Tiangong program. Throughout, Space Stations also charts the fascinating depiction of space stations in popular culture, whether in the form of children's toys, comic-book spacecraft, settings in science-fiction novels, or the backdrop to TV series and Hollywood movies. Space Stations is a beautiful and captivating history of the idea and the reality of the space station from the nineteenth century to the present day.

Liquid Propellant Rocket Combustion Instability DigiCat

The piston engines that powered Second World War fighters, the men who designed them, and the secret intelligence work carried out by both Britain and Germany would determine the outcome of the first global air war. Advanced jet engines may have been in development but every militarily significant air battle was fought by piston-engined fighters. Whoever designed the most powerful piston engines would win air superiority and with it the ability to dictate the course of the war as a whole. This is the never before told story of a high-tech race, hidden behind the closed doors of design offices and intelligence agencies, to create the war's best fighter engine. Using the fruits of extensive research in archives around the world together with the previously unpublished memoirs of fighter engine designers, author Calum E. Douglas tells the story of a desperate contest between the world's best engineers - the Secret Horsepower Race.

Orbital Mechanics for Engineering Students AIAA

This National Association of Rocketry handbook covers designing and building your first model rocket to launching and recovery techniques, and setting up a launch area for competition.

Breaking the Chains of Gravity Springer Science & Business Media

Liquid propellant rocket engines have propelled all the manned space flights, all the space vehicles flying to the planets or deep space, virtually all satellites, and the majority of medium range or intercontinental range ballistic missiles.

Saturn Apogee Books

On April 25, 2006, NASA's John C. Stennis Space Center hosted a series of lectures on Apollo Propulsion development. This monograph is a transcript of the event, held as part of the celebration to mark the 40th anniversary of the first rocket engine test conducted at the site then known as the Mississippi Test Facility. On April 23, 1966, engineers tested a cluster of five J-2 engines that powered the second stage of the Saturn V moon rocket.