Aero Hydrodynamics And The Performance Of Sailing Yachts The Science Behind Sailing Yachts And Their Design

SHANE ARTHUR

Naval Hydrodynamics: Unconventional ships. Ocean engineering Springer Science & Business Media
This book presents the state-of-the-art in simulation on supercomputers. Leading researchers present results achieved on systems of the High Performance Computing Center Stuttgart (HLRS) for the year 2010. The reports cover all fields of computational science and engineering, ranging from CFD to computational physics and chemistry to computer science, with a special emphasis on industrially relevant applications. Presenting results for both vector systems and microprocessor-based systems, the book makes it possible to compare the performance levels and usability of various architectures. As HLRS operates the largest NEC SX-8 vector system in the world, this book gives an excellent insight into the potential of vector systems, covering the main methods in high performance computing. Its outstanding results in achieving the highest performance for production codes are of particular interest for both scientists and engineers. The book includes a wealth of color illustrations and tables.
Principles of Yacht Design Thomas Reed
This modern overview to performance analysis places aero- and fluid-dynamic treatments, such as cascade and meridional flow analyses, within the broader context of turbomachine performance analysis. For the first time ducted propellers are treated formally within the general family of turbomachines. It also presents a new approach to the use of dimensional analysis which links the overall requirements, such as flow and head, through velocity triangles to blade element loading and related fluid dynamics within a unifying framework linking all aspects of performance analysis for a wide range of turbomachine types. Computer methods are introduced in the main text and a key chapter on axial turbine performance analysis is complemented by the inclusion of 3 major computer programs on an accompanying disc. These enable the user to generate and modify design data through a graphic interface to assess visually the impact on predicted performance and are designed as a Computer Aided Learning Suite for student project work at the professional designer level. Based on the author's many years of teaching at degree level and extensive research experience, this book is a must for all students and professional engineers involved with turbomachinery.
Progress in Industrial Mathematics at ECMI 2016 Springer
Authoritative, highly readable history of aerodynamics and the major theorists and their contributions.
Industrial Engineering, Machine Design And Automation (Iemda 2014) - Proceedings Of The 2014 Congress & Computer Science And Application (Ccsa 2014) - Proceedings Of The 2nd Congress National Academies Press
This encyclopaedic volume synthesises 25 years of research and development of this unique rig as adapted to western craft. It is a work which has been welcomed by the growing number of yachtsmen and designers throughout the world who already enjoy the benefits of junk rig or who wish to do so. Now in paperback for the first time, Practical Junk Rig examines the design and aerodynamic theory behind junk rigs and discusses how best to sail them. It outlines the rig in detail, the principles that underlie it, considers possible alternative shapes and arrangements and analyses

performance, all assisted by a wealth of detailed line illustrations. 'There is no better or more compehensive work on the subject available... it should be considered THE handbook on junk rigs for anyone interested in the subject' Sailing 'I cannot recommend this book too highly' Classic Boat

Aero-hydrodynamics and the Performance of Sailing Yachts Springer Nature

This is a groundbreaking, technical book on yacht design linked to the theory (and testing) of how a sailing yacht behaves underway. It is cutting edge in that the conclusions drawn are based on the tank testing and wind tunnel testing of models and represents the state of the art in performance prediction which underlies all modern yacht design. This brand new volume from the internationally respected hydrodynamics expert and consultant is bang up to date, with a systematic analysis of how a yacht performs underway.

High Performance Sailing A&C Black

This proceedings put together 68 selected articles from the joint conferences of 2014 Congress on Industrial Engineering, Machine Design and Automation (IEMDA2014) and the 2nd Congress on Computer Science and Application (CCSA2014), held in Sanya, China during December 12 - 14, 2014. The conference program of IEMDA 2014 focused on areas of Industrial Engineering, Machine Design and Automation, while the CCSA 2014 program provided the platform for Computer Science and Applications.Collected together the latest research results and applications on industrial engineering, machine design, automation, and computer science and other related Engineering topics. All submitted papers to this proceedings were subjected to strict peer-reviewing by 2-4 expert referees, to ensure that all articles selected are of highest standard and are relevance to the conference.

Reports and Memoranda A&C Black

More than a century and half ago, William Froude and his son Robert [1,2] conducted the first scientifically designed towing tank experiments using scaled ship models traveling in calm water or waves. Since then, advances in mathematics and technology have led to the development of various methods for the assessment of the dynamic behavior of ships. Yet, as we enter the 2nd decade of the 21st century the advent of goal-based regulations and the emergence of safe and sustainable shipping standards still confront our ability to understand the fundamentals and assure absolute ship safety in design and operations. To instigate renewed interest in the well-rehearsed subject of ship dynamics this Special Issue presents a collection of 12 high-quality research contributions with a focus on the prediction and analysis of the dynamic behavior of ships in a stochastic environment. The papers presented are co-authored by leading subject matter experts from Europe, the Far East, and the USA. These papers will be of interest to academics, practitioners, and regulators involved in the progression of ship science, technical services, and safety standards.

How to Develop a Winning Mindset A&C Black

The marine environment presents significant challenges for materials due to the potential for corrosion by salt water, extreme pressures when deeply submerged and high stresses arising from variable weather. Well-designed fibre-reinforced composites can perform effectively in the marine environment and are lightweight alternatives to metal components and more durable than wood. Marine Applications of Advanced Fibre-Reinforced Composites examines the technology, application and environmental considerations in choosing a fibre-reinforced composite system for use in marine structures. This book is divided into two parts. The chapters in Part One explore the manufacture, mechanical behavior and structural performance of marine composites, and also look at the testing of these composites and end of life environmental considerations. The chapters in Part Two then investigate the applications of marine composites, specifically for renewable energy devices, offshore oil and gas applications, rigging and sails. Underwater repair of marine composites is also reviewed. Comprehensively examines all aspects of fibre-reinforced marine composites, including the latest advances in design, manufacturing methods and performance Assesses the environmental impacts of using fibre-reinforced composites in marine environments, including end of life considerations Reviews advanced fibre-reinforced composites for renewable energy devices, rigging, sail textiles, sail shape optimisation and offshore oil and gas applications

Sail Performance Adlard Coles

TRB Special Report 306: Naval Engineering in the 21st Century: The Science and Technology Foundation for Future Naval Fleets examines the state of basic and applied research in the scientific fields that support naval engineering and explores whether Office of Naval Research (ONR) activities, under its National Naval Responsibility for Naval Engineering (NNR-NE) initiative, have been effective in sustaining these fields.

Based on Lectures of L. Prandtl AIAA

How and why does sail boat performance depend on the configuration and trim of boat and sails? This book provides the yachtsman with answers in a relatively straightforward account of the physical mechanisms of sailing. It presents an accessible overview of the fluid dynamic aspects of sailing and sailing technology, addressing both aeromechanics and hydromechanics. Readers are provided with the basic principles of physics and general mechanics that will assist their understanding of the fluid mechanics of sailing yachts. Rich appendices cover not only in-depth,mathematical-physical treatments and derivations for those wishing to explore further, but also helpful summaries of basic mathematical notions for those wishing to refresh their knowledge. This work explores keel yachts, specifically single-masted mono-hulls with ‘fore-and-aft’, Bermuda-rigged sails. However, much of it is applicable to other types of sailing vessels such as multi-hulls, yachts with multiple masts, windsurf boards and the like. Yachtsmen, yacht designers and professionals of sailing technology will all find something of interest in this work which provides explanations of the mechanics of sailing in a way that is scientifically justified, whilst remaining appealing to those wishing to use their knowledge on-board a sailing vessel. For some years I’m teaching a course on “Sailing Yacht Design” in the master class of yacht design. Actually, I’ve found your book the best one about physics of a sailing yacht I’ve ever read. Edward Canepa, assistant professor in Fluid Machinery at the University of Genova (Italy) ...very impressed, no wonder it took so long. It is “everything I ever wanted to know about sailing but was afraid to ask” ! Frank Woodward, former computational fluid dynamicist at the Boeing Company and Analytical Methods Inc., and a cruising yachtsman

Twenty-Second Symposium on Naval Hydrodynamics Elsevier

Jim Saltonstall has coached multiple National, European, World and Olympic racing champions, including Ben Ainslie, one of Britain's most successful Olympians. This quick reference handbook distills the wisdom of 40 years in the business to help all dinghy, yacht and windsurfers to improve their performance in one of the most challenging sports in the world. The book tackles all the issues that can arise at any point on the racecourse, from the starting line to the first mark to the finish line. It explains how to prepare for a race and how to get the best out of the boat in an accessible format (bite sized advice, tips and wisdom) and with an encouraging approach, offering intelligent analysis peppered with Jim's trademark sense of humour. Featuring photographs that illustrate specific aspects of all races and a checklist of all the key issues racers need to think about as they progress around the course, this book should be in every would-be champion's kitbag, both on and off the water. Endorsed by Ben Ainslie and with a foreword by Olympic gold medal-winner Iain Percy.

Classical Aerodynamic Theory Springer

Beginning with no. 650 each hundredth number contains a list of the Reports and memoranda published since the last list.

Faster Racing Techniques World Scientific

A groundbreaking technical analysis of yacht design based on cutting edge research in the field of aero-hydrodynamics.

Red Templar Aero-hydrodynamics and the Performance of Sailing YachtsThe Science Behind Sailing Yachts and Their Design

Fully updated, this authoritative and richly illustrated standard reference offers the latest information on rig design, sail construction and trim, wind-sail interaction, and the structure of the wind. From his 40 years of research and wind-tunnel tests, acknowledged expert Marchaj describes how these factors affect sail power and why certain rigs are superior in power and efficiency. Accessible and nonmathematical, this major work represents the cutting-edge wisdom on sailboat performance and makes a significant contribution to our understanding of this absorbing, complex subject.

Submarine Hydrodynamics Springer Science & Business Media

"This book is deeply fascinating...a must." -- Classic Boat Principles of Yacht Design is the authority on planning and creating your desired yacht. Inside you will find all the essentials, including: Design methodology and considerations The yacht's specifications Hull geometry, including lines plans and computer aided design (CAD) Hydrostatics and stability in waves and calm Hull design Keel and rudder design Sail and rig design Balance Propeller and engine characteristics High-speed powerboat hydrodynamics Hull construction considerations for sail and power Rig calculations ISO standards for dimensioning Cockpit, deck, and cabin layout Weight calculations Design evaluation, performance prediction, experimental techniques, and computational fluid dynamics "A classic." -- Cruising World "A sound and up to date manual of yacht design . . . a classic in its field" -- Practical Boat Owner "A definitive work on yacht design." -- Cruising "Ideal for budding designers and mathematically-minded yachtsmen." -- Yachting Monthly "The standard book on the subject." -- Yachting Life "Covers every aspect of the yacht design process." -- IBI magazine

Turbomachinery Performance Analysis Cambridge University Press

After nearly losing his life in Africa, retired Army Ranger and historian John Holliday is ready for some R&R back in the U.S. But when a disheveled Russian called Genrikhovich intercepts him in the airport, Holliday's homecoming will have to wait. Genrikhovich claims to know of a long-lost sword called Aos-the companion to Holliday's own Templar sword. Holliday quickly finds himself on a flight to Turkey, where he begins following a trail that will lead him to the dark heart of Russia-where the ancient Templar Order has secretly wielded power for centuries...

The Physics of Sailing for Yachtsmen Woodhead Publishing

*This is THE book on the aero- and hydromechanics of sailing.*Contains full and scientifically justified descriptions of the dependence of the performance of sailing yachts on their configuration and the underlying physical mechanisms.*Bridges the gap between the few existing books on the aero- and hydrodynamics of sailing and the more popular books that deal with the "what and how" but not with the "why" of sailing yacht configurations and boat trim.*New edition that also covers the recently evolved technology of foiling.REVIEWS (OF THE 1ST EDITION):From the December 2015 issue of the Dutch sailing magazine "Zeilen" (translated):"Decades of research and development in fluid dynamics, but also his experience as a cruising yachtsman, have put author Joop Slooff in the position to write a new standard work on the behavior of keel yachts in wind and water. In his preface the author states that it is his ambition to bridge the gap between the few existing scientific books on the aero- and hydrodynamics of sailing and the more popular books that describe the 'what' and 'how' but not so much the 'why' of boat trim. For this purpose the author treats the basic principles of the forces acting on a sailing yacht, but he describes also how these principles translate to the boat and its sails.... In the world of sailing Slooff is known for his involvement in the development of the winged keel of the America's Cup winning yacht Australia II. His book is an excellent work for the dedicated yachtsman who is interested in the 'why' and the scientific background of the behavior of his or her boat in wind and water".Comment (Dec. 2015) by Edward Canepa, assistant professor in Fluid Machinery at the University of Genova (Italy):"For some years I'm teaching a course on "Sailing Yacht Design" in the master class of yacht design. Actually, I've found your book the best one about physics of a sailing yacht I've ever read". Comment (Dec. 2015) by Frank Woodward, former computational fluid dynamicist at the Boeing Company and Analytical Methods Inc., and a cruising yachtsman (retired):"...very impressed, no wonder it took so long. It is 'everything I ever wanted to know about sailing but was afraid to ask' !"

Catalogue Springer

Practical Ship Hydrodynamics provides a comprehensive overview of hydrodynamic experimental and numerical methods for ship resistance and propulsion, maneuvering, seakeeping and vibration. Beginning with an overview of problems and approaches, including the basics of modeling and full scale testing, expert author Volker Bertram introduces the marine applications of computational fluid dynamics and boundary element methods. Expanded and updated, this new edition includes: Otherwise disparate information on the factors affecting ship hydrodynamics, combined to provide one practical, go-to resource. Full coverage of new developments in computational methods and model testing techniques relating to marine design and development. New chapters on hydrodynamic aspects of ship vibrations and hydrodynamic options for fuel efficiency, and increased coverage of simple design estimates of hydrodynamic quantities such as resistance and wake fraction. With a strong focus on essential background for real-life modeling, this book is an ideal reference for practicing naval architects and graduate students.

Marine Applications of Advanced Fibre-reinforced Composites MDPI

Wind Turbines and Aerodynamics Energy Harvesters not only presents the most research-focused resource on aerodynamic energy harvesters, but also provides a detailed review on aeroacoustics characteristics. The book considers all developing aspects of 3D printed miniature and large-size Savonious wind harvesters, while also introducing and discussing bladeless and aeroelastic harvesters. Following with a review of Off-shore wind

turbine aerodynamics modeling and measurements, the book continues the discussion by comparing the numerical codes for floating offshore wind turbines. Each chapter contains a detailed analysis and numerical and experimental case studies that consider recent research design, developments, and their application in practice. Written by an experienced, international team in this cross-disciplinary field, the book is an invaluable reference for wind power engineers, technicians and manufacturers, as well as researchers examining one of the most promising and efficient sources of renewable energy. Offers numerical models and case studies by experienced authors in this field Contains an overview and analysis of the latest research Explores 3D printing technology and the production of wind harvesters for real applications Includes, and uses, ANSYS FLUENT case files

University Curricula in the Marine Sciences and Related Fields Springer Nature
The Twenty-Second Symposium on Naval Hydrodynamics was held in Washington, D.C., from August 9-14, 1998. It coincided with the 100th anniversary of the David Taylor Model Basin. This international symposium was organized jointly by the Office of Naval Research (Mechanics and Energy Conversion S&T Division), the National Research Council (Naval Studies Board), and the Naval Surface Warfare Center, Carderock Division (David Taylor Model Basin). This biennial symposium promotes the technical exchange of naval research developments of common interest to all the countries of the world. The forum encourages both formal and informal discussion of the presented papers, and the occasion provides an opportunity for direct communication between international peers.