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KEY=SHIP - BRADFORD CARLY

Hydrodynamics of Ship Propellers

Cambridge University Press Technical introduction to ship propeller hydrodynamics, for researchers in ocean technology, naval architecture, mechanical engineering.

Practical Ship Hydrodynamics

Elsevier 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.

Hydrodynamics of Ship Propellers

"651/1.0-GB. Status Oct. '98" -- back cover.

Hydrodynamic Propulsion and Its Optimization

Analytic Theory

Springer Science & Business Media HYDRODYNAMIC PROPULSION AND ITS OPTIMIZATION ANALYTIC THEORY Hydrodynamic propulsion has been of major interest ever since craft took to the water. In the course of time, many attempts have been made to invent, develop, or to improve hydrodynamic propulsion devices. Remarkable achievements in this field were made essentially by experienced individuals, who were in need of reliable propulsion units such as paddle wheels, sculling devices, screw propellers, and of course, sails. The problem of minimizing the amount of input energy for a prescribed effective output was first investigated seriously at the beginning of this century. In 1919, BETZ presented a paper on air-screw propellers with minimum consumption of energy which could be applied to ship-screw propellers also. Next, attempts were made to optimize hydrodynamic propulsion units. Ensuing investigations concerned the optimization of the hydrodynamic system: ship-propeller. The first simple theory of ship propulsion which was presented considered more or less only thrust augmentation, wake processing and modification of propeller characteristics when operating behind the ships hull. This theory has been little improved meanwhile and is still useful, particularly with regard to practical ship design and for evaluating results of ship model tests. However, this theory is not adequate for optimization procedures necessary for high-technology propulsion, particularly for ship propellers utilizing propulsion improving devices such as tip end plates or tip fins at the propeller blades, spoilers in front of the propeller, asymmetrical stern etc.

Fundamentals of Ship Hydrodynamics

Fluid Mechanics, Ship Resistance

and Propulsion

Wiley Fundamentals of Ship Hydrodynamics: Fluid Mechanics, Ship Resistance and Propulsion Lothar Birk, University of New Orleans, USA Bridging the information gap between fluid mechanics and ship hydrodynamics Fundamentals of Ship Hydrodynamics is designed as a textbook for undergraduate education in ship resistance and propulsion. The book provides connections between basic training in calculus and fluid mechanics and the application of hydrodynamics in daily ship design practice. Based on a foundation in fluid mechanics, the origin, use, and limitations of experimental and computational procedures for resistance and propulsion estimates are explained. The book is subdivided into sixty chapters, providing background material for individual lectures. The unabridged treatment of equations and the extensive use of figures and examples enable students to study details at their own pace. Key features: • Covers the range from basic fluid mechanics to applied ship hydrodynamics. • Subdivided into 60 succinct chapters. • In-depth coverage of material enables self-study. • Around 250 figures and tables. Fundamentals of Ship Hydrodynamics is essential reading for students and staff of naval architecture, ocean engineering, and applied physics. The book is also useful for practicing naval architects and engineers who wish to brush up on the basics, prepare for a licensing exam, or expand their knowledge.

Unsteady Propeller Forces, Fundamental Hydrodynamics [and] Unconventional Propulsion

Marine Propellers and Propulsion

Butterworth-Heinemann The early development of the screw propeller. Propeller geometry. The propeller environment. The ship wake field, propeller perfomance characteristics.

Methods of hydrodynamic computation of ship propellers

Twenty-Second Symposium on Naval Hydrodynamics

National Academies Press 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.

Fourteenth Symposium, Naval Hydrodynamics

Propeller-related Problems, Cavitation, Nonlinear Free-surface Problems, Viscous Fluid Problems

Practical Ship Hydrodynamics

Elsevier Practical Ship Hydrodynamics, Second Edition, introduces the reader to modern ship hydrodynamics. It describes experimental and numerical methods for ship resistance and propulsion, maneuvering, seakeeping, hydrodynamic aspects of ship vibrations, and hydrodynamic options for fuel efficiency, as well as new developments in computational methods and model testing techniques relating to marine design and development. Organized into six chapters, the book begins with an overview of problems and approaches, including the basics of modeling and full-scale testing, prediction of ship hydrodynamic performance, and viscous flow computations. It proceeds with a discussion of the marine applications of computational fluid dynamics and boundary element methods, factors affecting ship hydrodynamics, and simple design estimates of hydrodynamic quantities such as resistance and wake

fraction. Seakeeping of ships is investigated with respect to issues such as maximum speed in a seaway, route optimization (routing), structural design of the ship with respect to loads in seaways, and habitation comfort and safety of people on board. Exercises and solutions, formula derivations, and texts are included to support teaching or self-studies. This book is suitable for marine engineering students in design and hydrodynamics courses, professors teaching a course in general fluid dynamics, practicing marine engineers and naval architects, and consulting marine engineers. Combines otherwise disparate information on the factors affecting ship hydrodynamics into one practical, go-to resource for successful design, development and construction. Updated throughout to cover the developments in computational methods and modeling techniques since the first edition published more than 10 years ago. 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.

Dictionary of Ship Hydrodynamics

Section on Propeller Geometry

Twentieth Symposium on Naval Hydrodynamics

Ships in a Seaway, Propeller Cavitation Performance, Ship Motions Under Way; Wave Resistance, Oscillating Propulsors, Ship Motions-nonlinear, Cavitation, Propeller Noise, Ships in Shallow

Water, Cavitation Inception; Supercavitating Flows, Diffraction; Nonlinear Drift, Wave Breaking, Near-surface Turbulence, Ship-generated Vortices, Hydrodynamic Impact, Bubble Flows, Waves, Turbulent Ship Flows, Ship Viscous Flows, Forced Wave Motion, Computation of Viscous Propulsor Flows

Naval Hydrodynamics: Boundary Layer Stability and Transition, Ship Boundary Layers and Propeller Hull Interaction, Cavitation, Geophysical

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important enough to be preserved, reproduced, and made generally available to the public. We appreciate your support of the preservation process, and thank you for being an important part of keeping this knowledge alive and relevant.

Damping in Propeller-generated Ship Vibrations

Hydrodynamic Propulsion and Its Optimization

Analytic Theory

Springer Science & Business Media HYDRODYNAMIC PROPULSION AND ITS OPTIMIZATION ANALYTIC THEORY Hydrodynamic propulsion has been of major interest ever since craft took to the water. In the course of time, many attempts have been made to invent, develop, or to improve hydrodynamic propulsion devices. Remarkable achievements in this field were made essentially by experienced individuals, who were in need of reliable propulsion units such as paddle wheels, sculling devices, screw propellers, and of course, sails. The problem of minimizing the amount of input energy for a prescribed effective output was first investigated seriously at the beginning of this century. In 1919, BETZ presented a paper on air-screw propellers with minimum consumption of energy which could be applied to ship-screw propellers also. Next, attempts were made to optimize hydrodynamic propulsion units. Ensuing investigations concerned the optimization of the hydrodynamic system: ship-propeller. The first simple theory of ship propulsion which was presented considered more or less only thrust augmentation, wake processing and modification of propeller characteristics when operating behind the ships hull. This theory has been little improved meanwhile and is still useful, particularly with regard to practical ship design and for evaluating results of ship model tests. However, this theory is not adequate for optimization procedures necessary for high-technology propulsion, particularly for ship propellers utilizing propulsion improving devices such as tip end plates or tip fins at the propeller blades, spoilers in front of the propeller, asymmetrical stern etc.

Ship Resistance and Propulsion

Practical Estimation of Propulsive Power

Cambridge University Press Ship Resistance and Propulsion provides a comprehensive approach to evaluating ship resistance and propulsion. Informed by applied research, including experimental and CFD techniques, this book provides guidance for the practical estimation of ship propulsive power for a range of ship types. Published standard series data for hull resistance and propeller performance enables practitioners to make ship power predictions based on material and data contained within the book. Fully worked examples illustrate applications of the data and powering methodologies; these include cargo and container ships, tankers and bulk carriers, ferries, warships, patrol craft, work boats, planing craft and yachts. The book is aimed at a broad readership including practising naval architects and marine engineers, seagoing officers, small craft designers, undergraduate and postgraduate students. Also useful for those involved in transportation, transport efficiency and ecologistics who need to carry out reliable estimates of ship power requirements.

Marine Propellers and Propulsion

Butterworth-Heinemann Marine Propellers and Propulsion, Fourth Edition, offers comprehensive, cutting edge coverage to equip marine engineers, naval architects or anyone involved in propulsion and hydrodynamics with essential job knowledge. Propulsion technology is a complex, multidisciplinary topic with design, construction, operational and research implications. Drawing on experience from a long and varied career in consulting, research, design and technical investigation, John Carlton examines hydrodynamic theory, materials and mechanical considerations, and design, operation and performance. Connecting essential theory to practical problems in design, analysis and operational efficiency, the book is an invaluable resource, packed with hard-won insights, detailed specifications and data. Features comprehensive coverage of marine propellers, fully updated and revised, with new chapters on propulsion in ice and high speed propellers Includes enhanced content on full-scale trials, propeller materials, propeller blade vibration, operational problems and much more Synthesizes otherwise disparate material on the theory and practice of propulsion technology from the past 40 years' development, including the latest developments in improving efficiency Written by a leading expert on propeller technology, essential for students, marine engineers and naval architects involved in propulsion and

hydrodynamics

Hydrodynamic Vibratory Forces Generated by a Ship's Propeller

Ship Resistance and Propulsion

Cambridge University Press This updated edition provides a modern scientific approach to evaluating ship resistance and propulsion for a range of ship types.

Prediction of Unsteady Loads and Moments on Ship Propellers

Marine Propellers and Propulsion

Elsevier Although the propeller lies submerged out of sight, it is a complex component in both the hydrodynamic and structural sense. This book fulfils the need for a comprehensive and cutting edge volume that brings together a great range of knowledge on propulsion technology, a multi-disciplinary and international subject. The book comprises three main sections covering hydrodynamics; materials and mechanical considerations; and design, operation and performance. The discussion relates theory to practical problems of design, analysis and operational economy, and is supported by extensive design information, operational detail and tabulated data. Fully updated and revised to cover the latest advances in the field, the new edition now also includes four new chapters on azimuthing and podded propulsors, propeller-rudder interaction, high-speed propellers, and propeller-ice interaction. · The most complete book available on marine propellers, fully updated and revised, with four new chapters on azimuthing and podded propulsors, propeller-rudder interaction, high-speed propellers, and propeller-ice interaction · A valuable reference for marine engineers and naval architects gathering together the subject of propulsion technology, in both theory and practice, over the last forty years · Written by a leading expert on propeller technology, essential for students of propulsion and hydrodynamics, complete with online worked examples

Marine Hydrodynamics

MIT Press A textbook that offers a unified treatment of the applications of hydrodynamics to marine problems. The applications of hydrodynamics to

naval architecture and marine engineering expanded dramatically in the 1960s and 1970s. This classic textbook, originally published in 1977, filled the need for a single volume on the applications of hydrodynamics to marine problems. The book is solidly based on fundamentals, but it also guides the student to an understanding of engineering applications through its consideration of realistic configurations. The book takes a balanced approach between theory and empirics, providing the necessary theoretical background for an intelligent evaluation and application of empirical procedures. It also serves as an introduction to more specialized research methods. It unifies the seemingly diverse problems of marine hydrodynamics by examining them not as separate problems but as related applications of the general field of hydrodynamics. The book evolved from a first-year graduate course in MIT's Department of Ocean Engineering. A knowledge of advanced calculus is assumed. Students will find a previous introductory course in fluid dynamics helpful, but the book presents the necessary fundamentals in a self-contained manner. The 40th anniversary of this pioneering book offers a foreword by John Grue. Contents Model Testing • The Motion of a Viscous Fluid • The Motion of an Ideal Fluid • Lifting Surfaces • Waves and Wave Effects • Hydrodynamics of Slender Bodies

Methods of Hydrodynamic Computation of Ship Propellers

Naval Hydrodynamics

Boundary Layer Stability and Transition, Ship Boundary Layers and Propeller Hull Interaction, Cavitation, Geophysical Fluid Dynamics: Twelfth Symposium

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our most important libraries around the world), and other notations in the work. This work is in the public domain in the United States of America, and possibly other nations. Within the United States, you may freely copy and distribute this work, as no entity (individual or corporate) has a copyright on the body of the work.As a reproduction of a historical artifact, this work may contain missing or blurred pages, poor pictures, errant marks, etc. Scholars believe, and we concur, that this work is important enough to be preserved, reproduced, and made generally available to the public. We appreciate your support of the preservation process, and thank you for being an important part of keeping this knowledge alive and relevant.

Twenty-Fourth Symposium on Naval Hydrodynamics

National Academies Press This report is part of a series of reports that summarize this regular event. The report discusses research developments in ship design, construction, and operation in a forum that encouraged both formal and informal discussion of presented papers.

Naval Hydrodynamics

Propeller-related Problems, Cavitation, Nonlinear Free-surface Problems, Viscous Fluid Problems

Symposia

Propeller-induced Vibration

Experimental Tests in Atmospheric Towing Tank

Ship's propellers are main sources of onboard vibration that can have adverse effects on humans and machinery alike. A reliable design tool that allows the prediction of propeller induced vibration, in the early design phases of new constructions would help prevent damage or discomfort and reduce costs related to later modifications of the propellers. In an effort to

obtain data on vibration generated by ship's propellers, tests can be performed on a ship model in a tow tank. Self-Propulsion, Resistance and Bollard tests are established tests used to characterize the ship's hydrodynamics in a tow tank. Recently some researchers are investigating the possibilities to help understand the how the propeller design affects the vibration and vibration propagation to the ship body. One of the main problems with these tests is the separation of vibrational contribution of the propeller versus the fundamental frequencies of the ship model. In this work, experimental model tests were performed to evaluate the pressure fluctuations created by the propeller on a vessels structure. Methods used to perform these tests included Experimental Modal Analysis and Operating Deflection Shape, the latter performed during the hydrodynamic tests. The results show how pressure measurements can be influenced by structural vibration and thus the importance of identifying ranges of vibrational effects from the ship models' structure during hydrodynamic testing to understand if structural vibrations need to be removed from the pressure sensor measurements to give an accurate representation of vibration effects due to the propeller.

Marine Rudders and Control Surfaces

Principles, Data, Design and Applications

Elsevier Marine Rudders and Control Surfaces guides naval architects from the first principles of the physics of control surface operation, to the use of experimental and empirical data and applied computational fluid dynamic modelling of rudders and control surfaces. The empirical and theoretical methods applied to control surface design are described in depth and their use explained through application to particular cases. The design procedures are complemented with a number of worked practical examples of rudder and control surface design. • The only text dedicated to marine control surface design • Provides experimental, theoretical and applied design information valuable for practising engineers, designers and students • Accompanied by an online extensive experimental database together with software for theoretical predictions and design development

Naval Hydrodynamics

Boundary Layer Stability and Transition, Ship Boundary Layers and Propeller Hull Interaction, Cavitation, Geophysical Fluid Dynamics

Influence of the Sea Bed and Berth Geometry on the Hydrodynamics of the Wash from a Ship's Propeller

Fifteenth Symposium on Naval Hydrodynamics

Advances in Marine Hydrodynamics

Computational Mechanics

CALCULATION OF HYDRODYNAMIC PRESSURES IMPOSED BY SHIP'S PROPELLER (Metodika Rascheta Gidrodinamicheskikh Davlenii, Vozbuzhdaemykh Grebnym Vintom).

Equations are given to describe the hydrodynamic pressure on a ship hull caused by the motion of the propeller blades.

Numerical Ship Hydrodynamics

An Assessment of the Tokyo 2015 Workshop

Springer Nature This book explores computational fluid dynamics applied to ship hydrodynamics and provides guidelines for the future developments in the field based on the Tokyo 2015 Workshop. It presents ship hull test cases, experimental data and submitted computational methods, conditions, grids and results. Analysis is made of errors for global (resistance, sinkage, trim and self-propulsion) and local flow (wave elevations, mean velocities and turbulence) variables, including standard deviations for global variables. The effects of grid size and turbulence models are evaluated for both global and local flow variables. Detailed analysis is made of turbulence modeling capabilities for capturing local flow physics. Errors and standard deviations are also assessed for added resistance (captive test cases) and course keeping/speed loss (free running test cases) in head and oblique waves. All submissions are used to evaluate the error and uncertainty by means of a systematic verification and validation (V&V) study along with statistical investigations.

Investigation of Hydrodynamic Characteristics of Screw Propellers Under Conditions of Reversing and Calculation Methods for Backing of Ships

The results are given of a theoretical and experimental investigation of hydrodynamic forces acting on fixed-pitch propellers during backing. A method for solving differential equations of ship's motion is presented. This method permits the determination of all reversing characteristics. A description of an experimental apparatus for testing of ship models in a test basin is given. The apparatus was used to measure and record, on oscillograph traces, all quantities which characterize the reversing process. The technique of conducting such model tests is given. (Author).

Eighteenth Symposium on Naval Hydrodynamics

National Academy Press This volume contains technical papers and discussions covering ship motions, ship hydrodynamics, experimental techniques, free-surface aspects, wave/wake dynamics, propeller/hull/appendage interactions, and viscous effects.

Hydrodynamics in Ship Design

The Maritime Engineering Reference Book

A Guide to Ship Design, Construction and Operation

Elsevier The Maritime Engineering Reference Book is a one-stop source for engineers involved in marine engineering and naval architecture. In this essential reference, Anthony F. Molland has brought together the work of a number of the world's leading writers in the field to create an inclusive volume for a wide audience of marine engineers, naval architects and those involved in marine operations, insurance and other related fields. Coverage ranges from the basics to more advanced topics in ship design, construction and operation. All the key areas are covered, including ship flotation and stability, ship structures, propulsion, seakeeping and maneuvering. The marine environment and maritime safety are explored as well as new technologies, such as computer aided ship design and remotely operated vehicles (ROVs). Facts, figures and data from world-leading experts makes this an invaluable ready-reference for those involved in the field of maritime engineering. Professor A.F. Molland, BSc, MSc, PhD, CEng, FRINA. is Emeritus Professor of Ship Design at the University of Southampton, UK. He has lectured ship design and operation for many years. He has carried out extensive research and published widely on ship design and various aspects of ship hydrodynamics. * A comprehensive overview from best-selling authors including Bryan Barrass, Rawson and Tupper, and David Eyres * Covers basic and advanced material on marine engineering and Naval Architecture topics * Have key facts, figures and data to hand in one complete reference book