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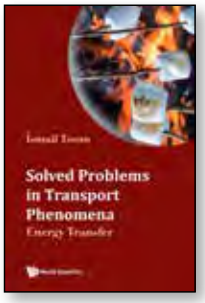
Highlights

Mechanical Engineering Catalogue 2024

page 4



by **Ismail Tosun** *(Middle East Technical University, Turkey)*

page 4

by **Ismail Tosun** *(Middle East Technical University, Turkey)*

page 5

edited by **Jaya Shankar Tumuluru** *(Southwestern Cotton Ginning Research Laboratory, USA)*

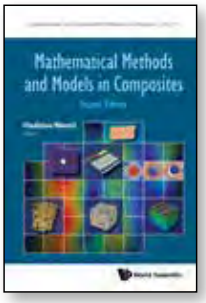
page 5

by **Allan J Organ** *(University of Cambridge, UK & King's College London, UK)*

page 7

by **David Rees** *(Brunel University London, UK)*

page 7



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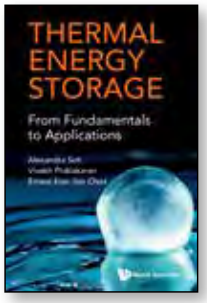
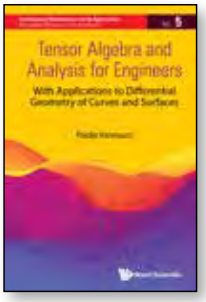
page 8



by **Alexandra Soh** *(National University of Singapore)*, **Vivekh Prabakaran** *(National University of Singapore)* & **Kian Jon Ernest Chua** *(National University of Singapore)*

page 8



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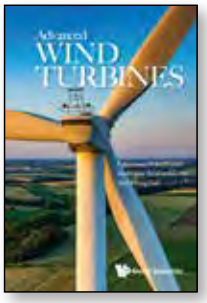
page 10

by **Amr M Baz** *(University of Maryland, USA)*

page 10



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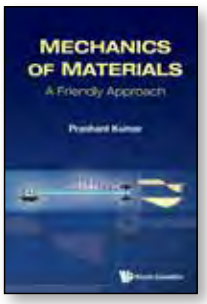
page 10

by **Spencer Kuo** *(New York University, USA)*

page 11



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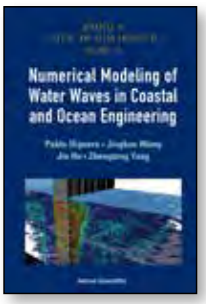
page 11



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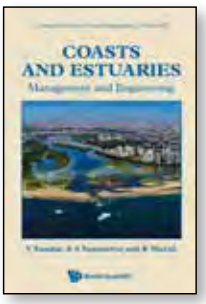
page 12



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page 12

by **Louay A Mohammad** *(COWI A/S, Denmark)*

page 12

edited by **Snehashish Chakraverty** *(National Institute of Technology Rourkela, India)* & **Perumandla Karunakar** *(Anurag University, Hyderabad, India)*

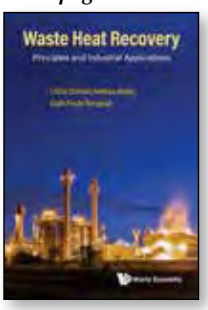
page 12

by **Zixing Cai** *(Central South University, China & Hunan ZIXING AI Academy, China)*

page 12

by **Jing Liu** *(Tsinghua University, China)*

page 12



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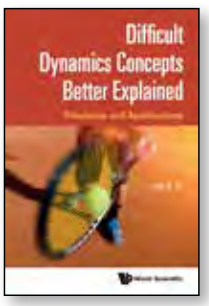
page 13



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Mechanical Engineering

CONTENTS

4	Bioengineering
4	Chemical Engineering
4	Energy
5	Industrial and Systems Engineering / Manufacturing
6	Materials
7	Mechanical Engineering
11	Ocean / Coastal Engineering
12	Robotics
12	Thermal Engineering / Packaging and Thermodymamics
13	General
14-19	Journals
21	Bestselling Backlist for Engineering
21	Proceedings
21	Title Index
22	Author Index

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Bioengineering

BIOENGINEERING FLUID MECHANICS

by **Tin-Kan Hung** *(University of Pittsburgh, USA)*

This book highlights the basic concepts and equations for bioengineering flow processes. Physical concepts and meanings are emphasized while rigorous derivations are simplified, making it easier for self learning on some biological and medical flow processes. The well known Bernoulli equation in hydraulics is extended for pulsating flows, peristaltic flows and cardiac pumping. The dimensional analysis, model law and dimensionless equations can be related to computational models and experimental observations. The velocity vector imaging stored in echocardiograms can be used to analyze the pumping characteristics of the ventricular contraction. New topics included oxygen transport in membrane oxygenator and micro mixing of blood flow in capillary channels.

- Relates the conventional fluid engineering to the different phenomena in bioengineering system
- Provides a systematic framework for life scientists to comprehend the mechanics of biological flow processes

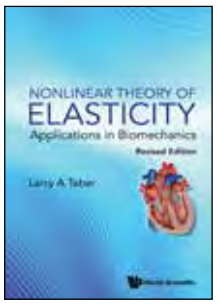
Readership: Researchers, professionals, academics, graduate and advanced undergraduate students in biomedical engineering, engineering mechanics, mechanical & aerospace engineering, chemical engineering and civil & environmental engineering.

200pp	**Dec 2023**	
978-981-4295-15-4	**US$68**	**£56**

NONLINEAR THEORY OF ELASTICITY

Applications in Biomechanics
(Revised Edition)

by **Larry A Taber** *(Washington University, USA)*



Soft biological tissues often undergo large (nearly) elastic deformations that can be modeled using the nonlinear theory of elasticity. Because of the varied approaches to nonlinear elasticity in the literature, some aspects of the subject may be difficult to appreciate.

This volume clarifies and unifies those treatments, illustrating the advantages and disadvantages of each through various examples in biomechanics. Applications include muscle, arteries, the heart, and embryonic tissues.

The revised edition includes new end-of-chapter problems, including answers and detailed solutions to most. The useful reference can be a good textbook for self-study, as well as senior- and graduate-level courses in biomechanics and nonlinear elasticity.

Readership: Researchers, professionals, academics, and graduate students in biomedical engineering, engineering mechanics and mechanical engineering.

472pp	**Apr 2023**	
978-981-127-051-2	**US$148**	**£130**
978-981-127-052-9(ebook)	**US$237**	**£210**

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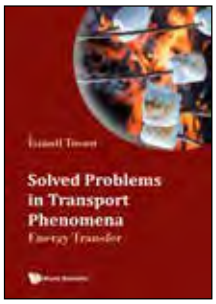
Chemical Engineering

SOLVED PROBLEMS IN TRANSPORT PHENOMENA

Energy Transfer

by **Ismail Tosun** *(Middle East Technical University, Turkey)*



Transport Phenomena is an umbrella term to describe the fundamental processes of momentum, energy, and mass transfer.

This unique compendium covers energy transfer at the microscopic and macroscopic levels in the three stages of problem-solving, namely formulation, simplification, and mathematical solution. The book does not overwhelm students with a large repertoire of problems. Instead, it highlights clear and easy presentation to help students grasp the methodology in problem-solving.

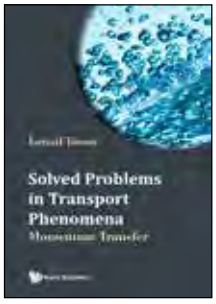
Readership: Researchers, professionals, academics, and graduate students in chemical engineering, mechanical engineering, petroleum engineering and environmental engineering.

361pp	**Jul 2023**	
978-981-127-429-9	**US$138**	**£120**
978-981-127-430-5(ebook)	**US$221**	**£195**

SOLVED PROBLEMS IN TRANSPORT PHENOMENA

Momentum Transfer

by **Ismail Tosun** *(Middle East Technical University, Turkey)*



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Readership: Researchers, professionals, academics, and graduate students in chemical engineering, mechanical engineering, civil engineering and environmental engineering.

276pp	**Oct 2022**	
978-981-125-624-0	**US$98**	**£80**
978-981-125-625-7(ebook)	**US$157**	**£125**

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Sustainable Chemistry Series

DENSIFICATION IMPACT ON RAW, CHEMICALLY AND THERMALLY PRETREATED BIOMASS

Physical Properties and Biofuels Production
edited by **Jaya Shankar Tumuluru** *(Southwestern Cotton Ginning Research Laboratory, USA)*

This book's focus is to understand how the densification process variables, biomass types and their blends, mechanical preprocessing, and thermal and chemical pretreatment methods impact the quality of the densified products produced for biofuel production. There is no specific book on the densification of raw biomass and their blends, pretreated (thermally and chemically) biomass, and its impact on the quality of the densified products and biofuels production. The book addresses the biomass challenges and how densification helps to overcome the challenges in terms of storage, transport, and conversion to fuels.

Readership: Undergraduate and graduate students, university professors, national laboratory researchers, independent researchers, industry, biorefinery managers, biomass process engineers, policy makers.

262pp	**May 2023**	
978-1-80061-378-2	**US$98**	**£85**
978-1-80061-379-9(ebook)	**US$157**	**£140**

STIRLING AND THERMAL-LAG ENGINES

Motive Power without the CO_2
by **Allan J Organ** *(University of Cambridge, UK & King's College London, UK)*

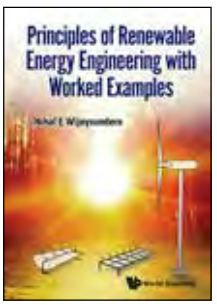
The book offers ready-made tools including a simplified algorithm for particle trajectory map construction; an author-patented mechanism delivering optimised working-gas distribution; flow and heat transfer data re-acquired in context and an illustrated re-derivation of the academically respected Method of Characteristics which now copes with shock formation and flow-area discontinuities. All formulations are presented in sufficient detail.

Readership: Lecturers and teachers of contemporary engineering syllabuses as well as members of thermodynamics groups at every university faculty worldwide. Members of the worldwide energy sector and mid- and low-technology industries seeking to diversify into low/zero-carbon energy and engineers.

484pp	**Jan 2023**	
978-1-80061-104-7	**US$148**	**£130**
978-1-80061-105-4(ebook)	**US$237**	**£190**

Energy

PRINCIPLES OF RENEWABLE ENERGY ENGINEERING WITH WORKED EXAMPLES



by **Nihal E Wijeysundera**

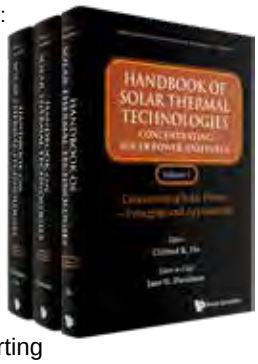
In this volume, engineering principles of renewable energy are presented as extensions of the various subjects covered in regular engineering courses. Topics include solar thermal and solar PV power, wind power, energy storage, tidal power, wave power, and ocean thermal energy, and hydroelectric, geothermal and biomass systems.

Readership: Professionals, academics, researchers, undergraduate and graduate students in mechanical engineering, chemical engineering, civil engineering and energy studies.

628pp	**Sep 2022**	
978-981-125-114-6	**US$168**	**£150**
978-981-125-115-3(ebook)	**US$269**	**£215**

World Scientific Series on Emerging Technologies: Avram Bar-Cohen Memorial Series - Vol 3

HANDBOOK OF SOLAR THERMAL TECHNOLOGIES



Concentrating Solar Power and Fuels
(In 3 Volumes)
Volume 1: Concentrating Solar Power — Principles and Applications
Volume 2: Concentrating Solar for Thermochemical Fuels, Storage and Chemical Commodities
Volume 3: Supplemental Material — Supporting Published Works
edited by **Clifford K Ho** *(Sandia National Laboratories, USA)* & **Jane H Davidson** *(University of Minnesota-Twin Cities, USA)*
Editor-in-chief: **Jane H Davidson** *(University of Minnesota-Twin Cities, USA)*

The three-volume handbook showcases the state of the art in the use of concentrated sunlight to produce electricity, industrial process heat, renewable fuels, including hydrogen and low-carbon synthesis gas, and valuable chemical commodities. The handbook illustrates the value and diversity of applications for concentrating solar power to contribute to the expanding decarbonization of multiple cross-cutting energy sectors.

Readership: Academia and research centers including national laboratories, graduate and senior level undergraduate students, and researchers specialising in solar energy, heat transfer, chemical processes, power, optics, materials.

1260pp	**Nov 2022**	
978-981-124-853-5(Set)	**US$795**	**£700**
978-981-124-860-3(Set)(ebook)	**US$1752**	**£1540**

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DESIGN FOR SIX SIGMA FOR ENGINEERS

by **Matthew Hu** *(Wayne State University, USA)*, **Kai Yang** *(Wayne State University, USA)*, **Michael Sheh** *(Engineous Software Inc., USA)* & **Malik Kayupov** *(Engineous Software Inc., USA)*

- IDOV process for DFSS
- Inventive Design methods
- Numerical and CAE tools
- Step by step procedures
- Examples and case studies

Readership: Graduate students, engineers and industrialists interested in the Design for Six Sigma methodology.

500pp	**Feb 2024**	
978-981-256-063-6	**US$115**	**£95**

INTRODUCTION OF SUPER-SPEED RAIL

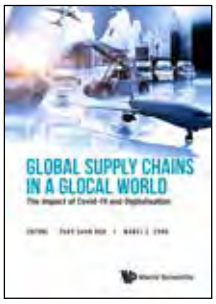
by **Qizhou Hu** *(Nanjing University of Science and Technology, China)*

This unique compendium analyzes its operation principle, system architecture and attribute characteristics, discusses its feasibility, and discusses the global integration issues in the SSR environment.

Readership: Researchers, professionals, academics and graduate students in civil engineering, mechanical engineering and systems engineering.

170pp	**Jun 2023**	
978-981-127-009-3	**US$78**	**£70**
978-981-127-010-9(ebook)	**US$125**	**£110**

GLOBAL SUPPLY CHAINS IN A GLOCAL WORLD



The Impact of Covid-19 and Digitalisation
edited by **Puay Guan Goh** & **Mabel C Chou** *(National University of Singapore, Singapore)*

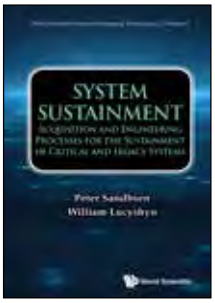
Global Supply Chains in a Glocal World aims to answer these mission-critical questions via a series of articles contributed by academics and senior management covering different industry sectors such as healthcare, food, e-commerce, textiles, mobility, and FMCG, as well as geographical, risk management, and technological perspectives. Proffering varied views of what has happened during the Covid years and what it means for the future, this book provides academics and practitioners a valuable resource when they navigate their next steps in an increasingly turbulent world.

Readership: Business School / MBA students. Entrepreneurs and senior management of MNCs, SMEs and startups across all industries. Might also be of interest to the general reader keen to understand how Covid-19 has changed industries and their global supply chains.

376pp	**Sep 2022**	
978-981-123-752-2	**US$118**	**£95**
978-981-123-753-9(ebook)	**US$189**	**£150**

World Scientific Series on Emerging Technologies: Avram Bar-Cohen Memorial Series - Vol 4

SYSTEM SUSTAINMENT



Acquisition and Engineering Processes for the Sustainment of Critical and Legacy Systems
by **Peter Sandborn** *(University of Maryland, USA)* & **William Lucyshyn** *(University of Maryland, USA)*

"Sustainment" (as commonly defined by industry and government), is comprised of maintenance, support, and upgrade practices that sustain or improve the performance of a system and maximize the availability of goods and services while minimizing their cost and footprint or, more simply, the capacity of a system to endure. Sustainment is a multi-trillion-dollar enterprise for critical systems, in both government (infrastructure and defense) and industry (transportation, industrial controls, data centers, and energy generation).

This book is a mix of engineering, operations research, and policy sciences intended to provide students with a thorough understanding of the concept of sustainability and sustainable product life-cycles, and an appreciation of the importance of sustaining critical systems. It starts from the key attributes for system sustainment that includes data analytics, engineering analysis and the public policy needed to support the development of technologies, processes, and frameworks required for the management of sustainable processes and practices.

Readership: This book is intended to be a resource for advanced undergraduate and graduate students in engineering (aerospace, civil, electrical, mechanical, and engineering management), business, and public policy who want to understand the ramifications of, and processes for, system sustainment. It is also a useful reference for industry short courses provided to practicing professionals, whom in many cases, were not introduced to system sustainment during their education and are now thrust into the field with minimal preparation.

388pp	**Sep 2022**	
978-981-125-684-4	**US$128**	**£100**
978-981-125-685-1(ebook)	**US$205**	**£165**

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QUALITY MANAGEMENT ESSENTIALS

by **Ivan Popov** *(University of Portsmouth, UK)*

This book aims to provide the readers with the essential practical knowledge and understanding of quality-related issues to make correct decisions faster. Hence, they can effectively contribute to a modern dynamic production environment.

Readership: Mechanical and manufacturing undergraduate and postgraduate students; engineers; A-level students taking Tech concepts.

216pp	**Sep 2022**	
978-1-80061-228-0	**US$78**	**£70**
978-1-80061-229-7(ebook)	**US$125**	**£110**

Computational and Experimental Methods in Structures - Vol 12

WEAR IN ADVANCED ENGINEERING APPLICATIONS AND MATERIALS

edited by **Luis Rodríguez-Tembleque** *(Universidad de Sevilla, Spain)*, **Jesús Vázquez** *(Universidad de Sevilla, Spain)* & **M H Ferri Aliabadi** *(Imperial College London, UK)*

Wear in Advanced Engineering Applications and Materials presents recent computational and practical research studying damage and wear in advanced engineering applications and materials. As such, this book covers numerical formulations based on the finite element method (FEM) — and the boundary element method (BEM) — as well as theoretical and experimental research to predict the wear response or life-limiting failure of engineering applications.

Readership: This book is written for PhD students in Mechanical Engineering, whose research topics are clearly governed by wear and surface damage due to mechanical interface interactions. It also serves as an update on the most recent numerical or experimental studies on wear in practicing engineering applications and/or materials.

256pp	**Apr 2022**	
978-1-80061-068-2	**US$98**	**£85**
978-1-80061-069-9(ebook)	**US$157**	**£135**

Materials

Frontier Research in Computation and Mechanics of Materials and Biology - Vol 7

ACOUSTIC METAMATERIALS AND WAVE CONTROL

by **Xiaoming Zhou** & **Gengkai Hu** *(Beijing Institute of Technology, China)*

The book starts with a simple mass-in-mass chain model to illustrate the concept of negative mass due to internal resonance and its impact on wave transmission. The practical transformation theory for controlling acoustic waves is explained. Pentamode acoustic metamaterials and related cloaking design are also included. Finally, the book ends up with the sub-diffraction-limited acoustic imaging based on metamaterials.

Readership: Researchers, academics, professionals and graduate students in mechanical engineering, condensed matter physics, new materials, classical mechanics and applied physics.

300pp	**Feb 2024**	
978-981-4641-68-5	**US$130**	**£108**
978-981-4641-69-2(ebook)	**US$208**	**£165**

Mechanical Engineering

HANDBOOK ON MECHANICS OF INELASTIC SOLIDS

(In 2 Volumes)
Volume 1: Plasticity, Creep and Viscous Deformation
Volume 2: Finite and Cyclic Deformation; Structural Applications
by **David Rees** *(Brunel University London, UK)*

This handbook covers a number of the more recent developments regarding the mechanics of deforming solids. In recent years, much progress has been reported in the wide-ranging mechanical behaviour of solids under stress. Here the term stress in a solid arises from a number of external actions including direct tension, compression, pressure, bending, shear and torsion. Many of the topics covered are yet to find their way into the standard texts, which are often restricted to isotropic elasticity and plasticity.

In this two-volume work, what might previously have been regarded as disparate, 'specialist' topics have been placed within a wider mechanics arena to emphasise their common, underlying principles. That arena is taken generally as one of inelasticity for dealing with the essential mechanics of these phenomena. Therein, this text brings together theory, experimental data, key references, examples and exercises, particularly those that relate to the important advances in the subject, both old and new. The presentation of material featured in this way anticipates that in their turn these additional topics will be recognised as essential material for study among engineers, physicists and applied mathematicians at undergraduate and postgraduate levels.

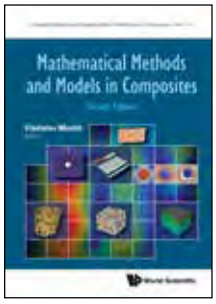
Readership: This handbook is intended for an academic readership and is designed for researchers, engineers and advanced undergraduate, graduate and post-graduate students studying or dealing with inelastic solids and/or classical mechanics.

1200pp	**May 2023**	
978-1-80061-206-8(Set)	**US$690**	**£550**
978-1-80061-207-5(Set)(ebook)	**US$1248**	**£1000**

Computational and Experimental Methods in Structures - Vol 13

MATHEMATICAL METHODS AND MODELS IN COMPOSITES

(2nd Edition)
edited by **Vladislav Mantič** *(University of Seville, Spain)*



Mathematical Methods and Models in Composites (Second Edition) provides an in-depth treatment of modern and rigorous mathematical methods and models applied to composites modeling on the micro-, meso-, and macro scale. There has been a steady growth in the diversity of such methods and models that are used in the analysis and characterization of composites, their behavior, and their associated phenomena and processes. This second edition expands upon the success of the first edition, and has been substantially revised and updated.

Readership: An essential reference for researchers and graduate and doctoral students in mathematics, physics and composite engineering interested in structural behaviour and damage mechanisms.

732pp	**Apr 2023**	
978-1-80061-187-0	**US$188**	**£150**
978-1-80061-188-7(ebook)	**US$301**	**£240**

NONLOCAL CONTINUUM DAMAGE AND PLASTICITY

Theory and Computations
by **Rashid K Abu Al-Rub** *(Texas A&M University, USA)*

Modeling of the evolution of distributed damage and plasticity such as micro-cracking, void formation, dislocation densities, and shear bands necessitates strain-softening constitutive models. The nonlocal continuum concept has emerged as an effective means for regularizing the (initial) boundary value problems with strain softening, capturing the size effects observed in experiments, capturing small-scale deviations from local continuum models caused by material heterogeneity, and avoiding spurious localization that gives rise to pathological mesh sensitivity in numerical computations. This book discusses the integral and gradient formulations of nonlocality, computational aspects, and comparison of approaches and emphasizes recent developments in the bridging of material length scales.

- Presents a thorough and a comprehensive treatment of the most important areas of nonlocal (integral and gradient) inelasticity (damage and plasticity) in continuum solid mechanics
- Describes the theoretical foundations of nonlocal inelasticity, its numerical formulation, and its finite element implementation
- Gives an insight on the theoretical design of micro-systems that could be used in the manufacturing of some practical applications such as sensors, actuators, microelectromechanical systems (MEMS and NEMS), microelectronic packaging, advanced composites, micromachining, welds, and functionally graded materials

Readership: Researchers in the academic community, national laboratories in materials and solid mechanics, companies in engineering mechanics and materials, and graduate students.

600pp	**May 2024**	
978-981-281-397-8	**US$190**	**£158**
978-981-281-398-5(ebook)	**US$304**	**£245**

NANOPARTICLE REINFORCED COMPOSITES FOR STRUCTURAL APPLICATIONS

by **Hassan Mahfuzn** *(Florida Atlantic University, USA)* & **Vinod Dhanak** *(The University of Liverpool, UK)*

Traditionally the subject of nanomaterials and nanoscience belonged to physicists and chemists over the last several decades since the legendary lecture given by Nobel laureate Richard P Feynman (Physics) in 1959, "There's Plenty of Room at the Bottom". However, the idea of nanoparticle reinforced composites or nanocomposites came only about a decade ago after the remarkable discovery of carbon nanotubes and buckyballs. Infusion of these nanoparticles into various polymer matrices and their precursors opened up an important area of research in enhancing the properties of composite materials as we know today.

- Most of the books in this area are collections of papers from conferences that do not provide a continuous flow of materials towards developing nanocomposites. The information is rather discrete
- The proposed book will have a seamless approach combining various facets of developing nanocomposites including basic science, synthesis and fabrication procedures, various characterization methodologies, and in-depth discussion of results

Readership: Graduate students and researchers in nanocomposites.

250pp	**Feb 2024**	
978-1-84816-482-6	**US$119**	**£99**
978-1-84816-483-3(ebook)	**US$191**	**£155**

TRIBO-ELECTROSTATICS

Fundamentals, Challenges and Perspectives

by **Lucian Dascalescu** *(University of Poitiers, France)*, **Mihai Lungu** *(West University of Timisoara, Romania)* & **Thami Zeghloul** *(University of Poitiers, France)*

- No other books in the field of tribo-electrostatics have so comprehensively cover the basic knowledge and recent development on the subject, and should be benefit to graduate students in physical and engineering sciences
- Such a text-book could also be of use to the engineers that need a better understanding of the physics behind the various useful or hazardous aspects of tribo-electrostatics, as well as to those who teach physics at high-school or university college level

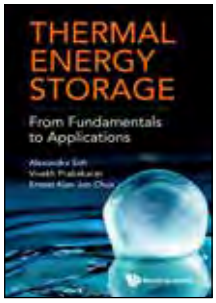
Readership: Advanced undergraduate and graduate students in Applied Physics and Engineering, researchers and practitioners in the fields of electrostatic processes and tribology, teachers of general physics at high-school or college level.

200pp	**Dec 2023**	
978-981-123-602-0	**US$88**	**£75**
978-981-123-603-7(ebook)	**US$141**	**£115**

THERMAL ENERGY STORAGE

From Fundamentals to Applications

by **Alexandra Soh** *(National University of Singapore, Singapore)*, **Vivekh Prabakaran** *(National University of Singapore, Singapore)* & **Kian Jon Ernest Chua** *(National University of Singapore, Singapore)*



Thermal energy storage systems constitute an important part of the energy distribution landscape in today's world.

This comprehensive compendium covers the development of thermal energy storage, from the most fundamental principles to recent developments and case studies in the field. Key focus is on the context of urban and commercial thermal management such as district cooling and heating systems and decentralised energy systems.

State-of-the-art advancements in both academia and industrial applications highlights the current direction of innovation and trends in the field.

Readership: Researchers, professionals, academics, graduate students in mechanical engineering, systems engineering, new materials and energy studies.

228pp	**Apr 2023**	
978-981-127-117-5	**US$88**	**£75**
978-981-127-118-2(ebook)	**US$141**	**£125**

Ship and Offshore Structural Mechanics - Vol 1

NONLINEAR FINITE ELEMENT METHODS

Engineering Applications

by **Yong Bai** *(Zhejiang University, China)* & **Jeom Paik** *(University College London, UK)*

This unique compendium introduces FEM (Finite Element Methods) as a general numerical technique for the solution of various engineering problems.Since the majority of applications of FEM are in the realm of mechanics including solid, fluids, structural and soil, descriptions in this book are focused on the important applications in structural engineering and science.

Readership: Researchers, professionals, academics and graduate students in civil engineering, mechanical engineering and ocean engineering.

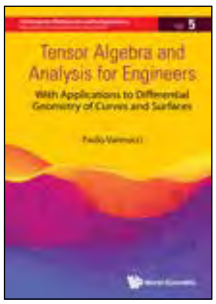
300pp	**Feb 2024**	
978-981-121-904-7	**US$118**	**£105**
978-981-121-905-4(ebook)	**US$189**	**£150**

Contemporary Mathematics and Its Applications: Monographs, Expositions and Lecture Notes - Vol 5

TENSOR ALGEBRA AND ANALYSIS FOR ENGINEERS

With Applications to Differential Geometry of Curves and Surfaces

by **Paolo Vannucci** *(Universitéde Versailles et Saint-Quentin-en-Yvelines, France)*



In modern theoretical and applied mechanics, tensors and differential geometry are two almost essential tools. Unfortunately, in university courses for engineering and mechanics students, these topics are often poorly treated or even completely ignored. At the same time, many existing, very complete texts on tensors or differential geometry are so advanced and written in abstract language that discourage young readers looking for an introduction to these topics specifically oriented to engineering applications.

This textbook, mainly addressed to graduate students and young researchers in mechanics, is an attempt to fill the gap. Its aim is to introduce the reader to the modern mathematical tools and language of tensors, with special applications to the differential geometry of curves and surfaces in the Euclidean space. The exposition of the matter is sober, directly oriented to problems that are ordinarily found in mechanics and engineering. Also, the language and symbols are tailored to those usually employed in modern texts of continuum mechanics.

Though not exhaustive, as any primer textbook, this volume constitutes a coherent, self-contained introduction to the mathematical tools and results necessary in modern continuum mechanics, concerning vectors, 2nd- and 4th-rank tensors, curves, fields, curvilinear coordinates, and surfaces in the Euclidean space. More than 100 exercises are proposed to the reader, many of them complete the theoretical part through additional results and proofs. To accompany the reader in learning, all the exercises are entirely developed and solved at the end of the book.

Readership: Graduate or PhD students and young researchers in mechanics, engineering, and applied mathematics. Applicable to courses in differential geometry or tensor algebra, and advanced applied or theoretical continuum mechanics courses for engineering students.

232pp	**Apr 2023**	
978-981-126-480-1	**US$88**	**£75**
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- Design and modelling challenges and solutions for implementing advanced packaging and integration technologies in high reliability applications

Readership: Graduate students, researchers professionals, and electrical and mechanical engineers in advanced packaging of micro and power electronic systems, design and modelling community.

300pp	**Mar 2024**	
978-981-4740-20-3	**US$138**	**£115**
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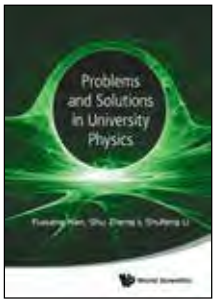
PROBLEMS AND SOLUTIONS IN UNIVERSITY PHYSICS



Newtonian Mechanics, Oscillations & Waves, Electromagnetism

by **Fuxiang Han** *(ShanghaiTech University, China)*

- A detailed solution is provided to every problem. For a problem that is not straightforward, the underlying physics principle(s) and idea(s) will be spelled out very clearly
- Useful problem-solving techniques are developed in some problems
- Basic numerical techniques can be learned and practiced in some problems

Readership: Undergraduate students in science/engineering field and physics lecturers.

500pp	**Nov 2023**	
978-981-4602-03-7(pbk)	**US$58**	**£48**

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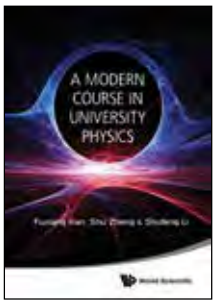

Newtonian Mechanics, Oscillations & Waves, Electromagnetism

by **Fuxiang Han** *(ShanghaiTech University, China)*

- The book is calculus-based. Calculus is intensively used in the elucidation of physics concepts and ideas
- Materials are updated to the present-day frontiers of science and technology wherever possible. The reader can get to know how the fundamental physics principles are being utilized in current science and technology
- Relevant subjects are treated coherently. With this treatment, the reader may feel like reading a well-written novel when a part of the book (for example, Newtonian mechanics) is studied

Readership: Undergraduate students in science/engineering field and physics lecturers.

400pp	**Nov 2023**	
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SYNCHRONIZATION OF SYSTEMS WITH TIME-DELAYED COUPLING

by **Erik Steur** *(Katholieke Universiteit Leuven, Belgium)*, **Toshiki Oguchi** *(Tokyo Metropolitan University, Japan)* & **Henk Nijmeijer** *(Eindhoven University of Technology, The Netherlands)*

The book aims to provide the tools for analyzing the synchronization of identical systems under time-delayed coupling. On the structural assumption that the system itself is semi-passive — i.e. the system is behaving as a passive system outside some ball-conditions ensuring synchronization of two systems under time-delayed coupling — the framework is extended to the more general situation of a network with time-delayed diffusive coupling.

Readership: Graduate students, researchers and academics interested in complex systems and control theory.

250pp	**Jan 2024**	
978-981-4569-80-4	**US$101**	**£84**
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FLUID GAUGE THEORY

New Perspectives on Fluid Mechanics from Theoretical Physics

by **Tsutomu (Jixin) Kambe**

- Useful for researchers and postgraduate students not only in the field of fluid mechanics, but also turbulence, mechanical engineering, physics, geophysics, or space physics, and also to general readers interested in science
- Provides a key to resolving the historical riddle of the dust striation pattern observed in the Kundt's experiment of resonance tube of acoustics in 1866, more than 150 years ago; Computer experiments are currently carried out to study the Kundt's experiment of acoustic resonance

Readership: Graduate students and researchers in the field of fluid mechanics, mechanical engineering, physics, geophysics or space physics.

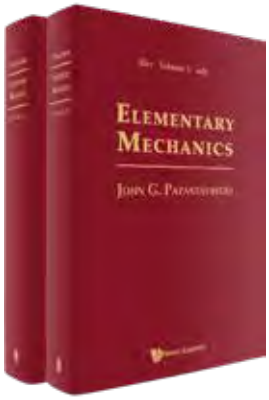
180pp	**Jan 2024**	
978-981-126-122-0	**US$78**	**£60**
978-981-126-123-7(ebook)	**US$125**	**£100**

ELEMENTARY MECHANICS

(In 2 Volumes)

by **John G Papastavridis**

(Georgia Institute of Technology, USA)



This is a comprehensive and state-of-the-art compendium of classical or Newtonian (non relativistic and non quantum) mechanics from an advanced and unified viewpoint, namely, from the continuum, or field, form of the fundamental principles of linear and angular momentum of Euler, Cauchy, Hamel et al. The title adjective "elementary" simply means no Lagrangean and no Hamiltonian theories and methods. Yet, in spite of its high level, this extensive work of more than 1450 dense pages of text, and more than 350 pages of galleries is eminently readable and inclusive.

Specifically:

- The book opens with a unique part on the history of theoretical and applied mechanics from classical antiquity (Greece) to late 20th century, including many hundreds of portraits and photos of famous researchers in mechanics (some appearing in public for the first time), and select pages from their most famous works.
- Then, to make this volume as self-contained as possible and establish better rapport with its readers, thus saving them precious time and energy, an extensive, handbook-like exposition of the necessary mathematics is supplied; i.e., algebra + calculus of Cartesian vectors and tensors, and linear algebra / matrices in both indicial and direct notations.
- Afterwards, mechanics proper is treated (in order of increasing complexity): first, particle and general mechanics; then, the rigid body; and last, general continua with an introduction to elastic solids. All basic concepts and principles are presented in general form, exact equations as well as their approximations. The emphasis is on ideas and results of permanent interest.

Readership: Teachers, and Researchers in most areas of engineering (especially aerospace, mechanical, and engineering mechanics), physics, and applied mathematics.

1680pp	**Nov 2023**	
978-981-4603-04-1(Set)	**US$384**	**£319**
978-981-4603-05-8(Set)(ebook)	**US$614**	**£490**

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Frontier Research in Computation and Mechanics of Materials and Biology

IMMERSED METHODS FOR COUPLED CONTINUA

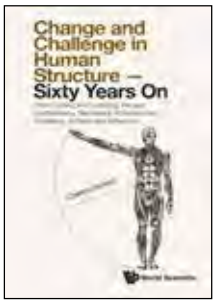
by **Sheldon Wang** *(Midwestern State University, USA)* & **Lucy Zhang** *(Rensselaer Polytechnic Institute, USA)*

This compendium provides a broad introduction of original immersed boundary methods and current extension in computational mechanics communities. It highlights a comprehensive review of immersed methods in the context of computational fluid and solid mechanics.

Most importantly, the appendix includes a complete two-dimensional working Fortran 90 immersed continua code with implicit matrix-free Newton Krylov iteration for compressible fluid and solid systems. **Readership:** Researchers, academics, professionals and graduate students in mechanical engineering, numerical analysis & computational maths, nonlinear science, and ocean engineering.

400pp	**Dec 2023**	
978-981-3234-50-5	**US$138**	**£121**
978-981-3234-51-2(ebook)	**US$221**	**£175**

CHANGE AND CHALLENGE IN HUMAN STRUCTURE — SIXTY YEARS ON



From Cutting and Counting, through Mathematics, Mechanics, Molecules and Modelling, to Brain and Behaviour!

by **Charles Oxnard** *(University of Western Australia, Australia)*

"I strongly recommend this marvellous book that should be of interest to students and professional anatomists alike. While topographical anatomical teaching is the norm today, with the focus only on the body of facts needed to practice medicine, Oxnard demonstrates that the historical dimension, how anatomies come about and how they work, add richness and interest to the subject. They transform anatomy from a descriptive to a hypothesis-testing science. With this comes both a broader educational experience and a reimagining of anatomy as a discipline worthy of deeper inquiry. Oxnard brings all of this to life in this fascinating account of his sixty years of anatomical investigation and thinking. With its curious and exciting insights into anatomical form and function, it will engage, inspire and educate." **Paul O'Higgins, Professor of Anatomy, University of York, UK**

Readership: Academics, researchers, lecturers, graduate and undergraduate STEM and medical students in anatomy, anthropology, human biology, evolution, forensic science, and related fields. The book introduces physical, mathematical and engineering approaches to anatomical research so it is also of interest to modellers and bioengineers. The non-jargon nature of the writing should appeal to high school students, teachers, and general readers interested in human structure, function and evolution.

300pp	**Aug 2023**	
978-981-126-292-0	**US$108**	**£85**
978-981-126-293-7(ebook)	**US$173**	**£140**

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SMART STRUCTURES

From Concepts to Applications

by **Amr M Baz** *(University of Maryland, USA)*

The book presents a comprehensive coverage on smart structures, starting from basic concepts, to a wide spectrum of critical applications, that include piezoelectric-based sensors, actuators, and the self-sensing actuators. Throughout the book attempts have been carried out to develop electrical analogies of the structural/piezoelectric interactions.

Readership: Researchers, Professors and Lectures in Mechanical Engineering, Civil Engineering UG Elective and Graduate courses.

534pp	**Sep 2023**	
978-1-80061-412-3	**US$158**	**£140**
978-1-80061-413-0(ebook)	**US$253**	**£220**

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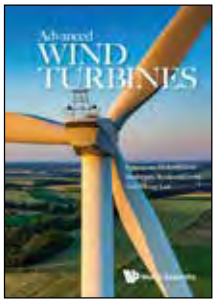

by **Palanisamy MohanKumar** *(Nanyang Technological University, Singapore)*, **Sivalingam Krishnamoorthi** *(Rolls-Royce Singapore Pte Ltd, Singapore)* & **Teik-Cheng Lim** *(Singapore University of Social Sciences, Singapore)*

"This book is a good reference for those wanting to better understand the aerodynamics driving the design and performance of vertical axis wind turbines. The authors have written it from the perspective of industrial applications focused on the conditions specifically for small city-states that are not naturally endowed with sufficiently strong wind. It is a veritable mine of numerical and experimental data, useful for research and professional work. It proved to be a useful resource throughout the design process for a client's unique wind energy project. I would strongly recommend this book as a good reference for scientists, engineers and any companies worldwide working on wind turbines." **Ion Paraschivoiu, Full Professor, Polytechnique Montréal, Canada**

Readership: Wind turbine engineers and companies working on non-conventional wind turbines, such as Vertical Axis Wind Turbines and Floating Offshore Wind Turbines. Academics, researchers, and postgraduate students in Wind Engineering.

500pp	**Jul 2023**	
978-981-127-248-6	**US$168**	**£150**
978-981-127-249-3(ebook)	**US$269**	**£235**

NONLINEAR WAVES AND INVERSE SCATTERING TRANSFORM

by **Spencer Kuo** *(New York University, USA)*

This book is presented from the physics and engineering points of view, rather than from the mathematics point of view, making it easier for physics and engineering students to navigate the material. The selection of topics and the focus given to each provide essential materials for a lecturer to cover the bases in a one-semester nonlinear wave course

Readership: Graduate and senior graduate courses on nonlinear waves, also relevant as a reference book for researchers, research labs and academic institutes.

200pp	**Jul 2023**	
978-1-80061-403-1	**US$78**	**£70**
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Essential Textbooks in Physics

HOW TO DERIVE A FORMULA

Volume 2: Further Analytical Skills and Methods for Physical Scientists

by **Alexei A Kornyshev** *(Imperial College London, UK)* & **Dominic O'Lee**

This two-volume book *How to Derive a Formula* is an attempt to engage these learners, presenting mathematical methods in as simple as possible terms, with more of an emphasis on skills as opposed to technical knowledge. Based on intuition and common sense rather than mathematical rigor, it teaches students from scratch using pertinent examples, many taken across the physical sciences to demonstrate the application of the taught methods.

This book provides an interesting new perspective of what a mathematics textbook could be, including historical facts and humour to complement the material. The metaphor adopted in both volumes is an ascent to Everest; from the Base Camp to Camp 1, from Camp 1 to Camp 2 (Volume 1); from Camp 2 to Camp 3, from Camp 3 to Camp 4 (Volume 2). Volume 1 was about the necessary basics. Volume 2 proceeds to more advanced and challenging methods for deriving formulae. Inevitably, the formalism of these methods is more involved and challenging for the readers, than in Volume 1. Whereas the approach of Volume 1 is upheld in Volume 2, the latter cannot be expected to be the same 'easy reading'.

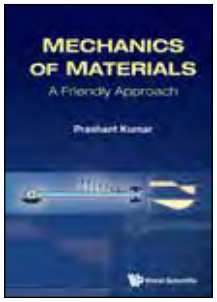
Readership: Undergraduate and graduate students (in any disciplines of exact sciences), and postdoctoral researchers in physical sciences, university lecturers for teaching the material of some of the chapters of the book.

750pp	**May 2023**	
978-1-80061-297-6(pbk)	**US$98**	**£80**
978-1-80061-279-2	**US$168**	**£135**
978-1-80061-280-8(ebook)	**US$269**	**£215**

MECHANICS OF MATERIALS

A Friendly Approach

by **Prashant Kumar** *(Indian Institute of Technology Kanpur, India)*



The knowledge of mechanics of materials is the very foundation for advanced topics in mechanical, civil, aerospace, chemical, ceramic engineering and materials science.

This comprehensive book presents materials with a three-dimensional approach rather than two-dimensional analysis adopted by existing books. It develops the required background thoroughly before basic elements such as stress and strain tensors are formulated. The presentation is richly filled with anecdotes, illustrations and solved examples. Special care has been taken to carry out algebra and the derivations in small digestible steps.

Readership: Researchers, professionals, academics, undergraduate and graduate students in mechanical engineering, civil engineering, aerospace engineering, materials science and chemical engineering.

544pp	**Sep 2022**	
978-981-124-845-0	**US$138**	**£120**
978-981-124-846-7(ebook)	**US$221**	**£195**

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Ocean / Coastal Engineering

COASTAL MANAGEMENT IN THE FACE OF CLIMATE CHANGE

by **Dominic Reeve** *(University of Plymouth, UK)*

Coastal management in the face of climate change is about methods that are increasingly required by Government Agencies for sea defence design, monitoring and management. This book highlights major concepts developed in the last 20 years or so for assessing the performance of coastal defences. It begins with an introduction to the key concepts of coastal management and the idea that most decisions have to be made using information which is neither complete nor certain. This lays the foundation for the second chapter which explains how a risk-based approach can help decision-makers constrain and to some extent quantify uncertainties. The following chapters comprehensively cover practical aspects of beach monitoring, estimating the nearshore wave conditions, quantifying the littoral drift environment, predicting changes in beach configuration, integrating the various components into a coherent management framework. Several examples of applications of the methods are given to illustrate the advantages and limitations of the different techniques, together with a case study from the south coast of the UK.

The book is aimed at practicing coastal managers and engineers; to provide some practical guide to using the results of research efforts over the last decade. The material is also suitable for final year undergraduates and MSc students. It brings together in one book material that is currently dispersed across many sources which are not easy for the non-expert to access.

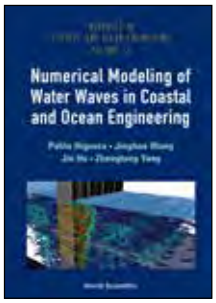
Readership: Graduate students, practitioners, and researchers in coastal engineering, civil engineering, environmental management and planning and environmental engineering.

200pp	**Aug 2024**	
978-1-84816-583-0	**US$106**	**£88**
978-1-84816-584-7(ebook)	**US$170**	**£135**

Advances in Coastal and Ocean Engineering - Vol 13

NUMERICAL MODELING OF WATER WAVES IN COASTAL AND OCEAN ENGINEERING

by **Pablo Higuera** *(National University of Singapore, Singapore & The University of Auckland, New Zealand)*, **Jinghua Wang** *(The Hong Kong Polytechnic University, Hong Kong)*, **Jie Hu** *(National University of Singapore, Singapore)* & **Zhengtong Yang** *(Technology Centre for Offshore and Marine, Singapore)*



This unique compendium introduces the field of numerical modelling of water waves. The topics included the most widely used water wave modelling approaches, presented in increasing order of complexity and categorized into phase-averaged and phase-resolving at the highest level.

A comprehensive state-of-the-art review is provided for each chapter, comprising the historical development of the method, the most relevant models and their practical applications. A full description on the method's underlying assumptions and limitations are also provided. The final chapter features coupling among different models, outlining the different types of implementations, highlighting their pros and cons, and providing numerous relevant examples for full context.

Readership: Researchers, professionals, academics, undergraduate and graduate students in ocean/coastal engineering and fluid mechanics.

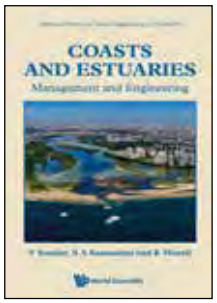
208pp	**Apr 2023**	
978-981-126-545-7	**US$78**	**£70**
978-981-126-546-4(ebook)	**US$125**	**£110**

Advanced Series on Ocean Engineering - Vol 57

COASTS AND ESTUARIES

Management and Engineering

by **V Sundar** *(Indian Institute of Technology Madras, India)*, **S A Sannasiraj** *(Indian Institute of Technology Madras, India)* & **K Murali** *(Indian Institute of Technology Madras, India)*



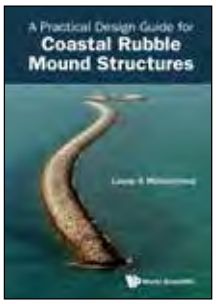
This book encompasses the engineering principles involved in field data observation, measurement, collection, and processing; the prediction of wave climate and sediment transport using measured field data; numerical modelling involving calibration and validation of the hydrodynamic and morphodynamic processes; and the study of the underlying physical processes and the application of sustainable engineering measures to combat coast- and estuary-related problems.

Readership: Advanced undergraduates, graduate students, planners, and design engineers dealing with coastal morphology, maritime hydraulics and sustainable development along coasts.

412pp	**Jan 2023**	
978-981-126-180-0	**US$118**	**£105**
978-981-126-181-7(ebook)	**US$189**	**£165**

A PRACTICAL DESIGN GUIDE FOR COASTAL RUBBLE MOUND STRUCTURES

by **Louay A Mohammad** *(COWI A/S, Denmark)*



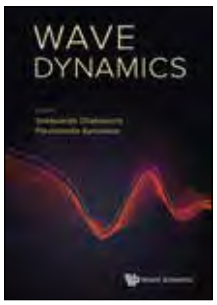
This comprehensive compendium highlights the practical side in the design of the coastal rubble mound structures. All basic rubble mound structural elements with various special features or arrangements are discussed and presented with guidelines to the best practices.

Readership: Researchers, professionals, academics, and graduate students in coastal engineering and civil engineering.

476pp	**Apr 2023**	
978-981-126-171-8	**US$148**	**£120**
978-981-126-172-5(ebook)	**US$237**	**£190**

WAVE DYNAMICS

edited by **Snehashish Chakraverty** *(National Institute of Technology Rourkela, India)* & **Perumandla Karunakar** *(Anurag University, Hyderabad, India)*



The aim of this book is to address the efficient and recently developed theories along with the basic equations of wave dynamics. The latest development of analytical/semi analytical and numerical methods with respect to wave dynamics are also covered. Further few challenging experimental studies are considered for related problems. This book presents advances in wave dynamics in simple and easy to follow chapters for the benefit of the readers/researchers.

Readership: This book is mainly written for the undergraduates, graduates, researchers, industry, faculties etc. all over the world as the book covers various analytical and numerical/ computational methods for solving different models governing water, sound, electromagnetic, seismic and shock waves.

296pp	**Mar 2022**	
978-981-124-535-0	**US$98**	**£80**
978-981-124-536-7(ebook)	**US$157**	**£130**

Robotics

ROBOTICS

From Manipulator to Mobilebot

by **Zixing Cai** *(Central South University, China & Hunan ZIXING AI Academy, China)*

- This book provides comprehensive coverage of the core technology of robotics
- This book is organised into three parts: namely, robot manipulator, mobile robot, and robot applications
- This book pays close attention to the application of robotics in industry, by introducing a number of real-life case studies in the fields of manipulator dynamics modelling, mobile robot planning and control

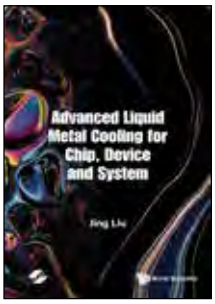
Readership: Advanced undergraduate, graduate and post-grad researcher in the discipline/profession of robotics, automatic control, mechatronic engineering, intelligent S&T, computer science and engineering, electronic engineering, management and decision system engineering, and other related fields.

656pp	**Oct 2022**	
978-981-125-346-1	**US$178**	**£155**
978-981-125-347-8(ebook)	**US$285**	**£250**

Thermal Engineering / Packaging and Thermodynamics

ADVANCED LIQUID METAL COOLING FOR CHIP, DEVICE AND SYSTEM

by **Jing Liu** *(Tsinghua University, China)*



This compendium summarizes the core principles and practical applications of a brand-new advanced chip cooling category — liquid metal cooling. It illustrates the science and art of room temperature liquid metal enabled cooling for chip, device and system. The concise volume features unique scientific and practical merits, and clarified intriguing liquid metal coolant or medium behaviors in making new generation powerful cooling system.

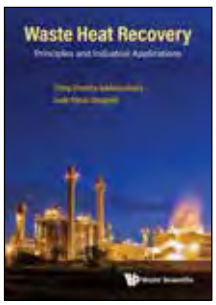
Readership: Researchers, professionals, academics and graduate students in mechanical engineering, new materials and applied and technical physics.

960pp	**May 2022**	
978-981-124-585-5	**US$198**	**£160**
978-981-124-586-2(ebook)	**US$317**	**£255**

WASTE HEAT RECOVERY

Principles and Industrial Applications

by **Chirla Chandra Sekhara Reddy**, **Gade Pandu Rangaiah** *(National University of Singapore, Singapore)*



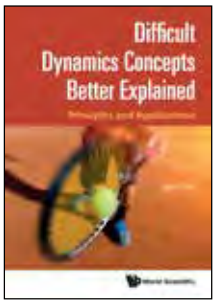
- Unique coverage of fundamentals of and applications in waste heat recovery
- Many industrial applications and examples for a wide range of industries
- First author with nearly 30 years of industrial experience, and second author with more than 40 years of experience in research and teaching

Readership: Students, researchers, professionals, and practitioners in chemical/process/energy/mechanical engineering.

884pp	**Jun 2022**	
978-981-124-839-9	**US$198**	**£160**
978-981-124-840-5(ebook)	**US$338**	**£270**

General

DIFFICULT DYNAMICS CONCEPTS BETTER EXPLAINED



Principles and Applications

by **Jay F Tu** *(North Carolina State Univ., USA)*

The unique compendium emphasizes the fundamental dynamics principles with historical backgrounds, and shows clearly how more complicated equations could be derived from basic ones with neat mathematical tools. It also shows why and how to use correct governing equations for real engineering problem solving, not just for standard homework problems.

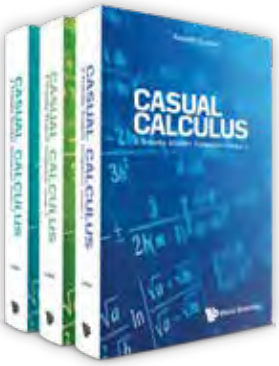
Readership: Researchers, professionals, academics, undergraduate and graduate students in engineering mechanics, classical mechanics, continuum physics and acoustics.

400pp	**Jun 2023**	
978-981-126-247-0	**US$138**	**£110**
978-981-126-248-7(ebook)	**US$221**	**£175**

CASUAL CALCULUS: A FRIENDLY STUDENT COMPANION

(In 3 Volumes)

by **Kenneth H Luther** *(Valparaiso University, USA)*



Exercises are structured in three sets to force multiple encounters with each topic. Solved examples in the text are accompanied by "You Try It" problems, which are similar to the solved examples; the students use these to see if they're ready to move forward. Then at the end of the section, there are "Practice Problems": more problems similar to the "You Try It" problems, but given all at once. Finally, each section has Challenge Problems — these lean to being equally or a bit more difficult than the others, and they allow students to check on what they've mastered.

Readership: Undergraduate students currently taking or refreshing themselves on Calculus.

1796pp	**Sep 2022**	
978-981-124-264-9(Set)(pbk)	**US$188**	**£165**
978-981-124-263-2(Set)	**US$448**	**£395**
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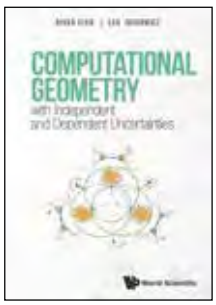
COMPUTATIONAL GEOMETRY WITH INDEPENDENT AND DEPENDENT UNCERTAINTIES



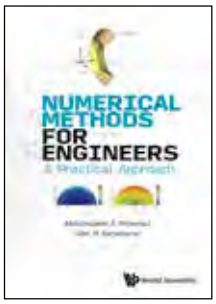
by **Rivka Gitik** *(The Hebrew University of Jerusalem, Israel)* & **Leo Joskowicz** *(The Hebrew University of Jerusalem, Israel)*

This comprehensive compendium describes a parametric model and algorithmic theory to represent geometric entities with dependent uncertainties between them. The theory, named Linear Parametric Geometric Uncertainty Model (LPGUM), is an expressive and computationally efficient framework that allows to systematically study geometric uncertainty and its related algorithms in computer geometry.

Readership: Researchers, professionals, academics, undergraduate and graduate students in robotics and mechanical engineering.

160pp	**Sep 2022**	
978-981-125-383-6	**US$78**	**£60**
978-981-125-384-3(ebook)	**US$125**	**£100**

NUMERICAL METHODS FOR ENGINEERS



A Practical Approach

by **Abdulmajeed A Mohamad** *(University of Calgary, Canada)* & **Adel M Benselama** *(ISAE-ENSMA, France)*

The unique compendium is an introductory reference to learn the most popular numerical methods cohesively. The text focuses on practical applications rather than on abstract and heavy analytical concepts. The key elements of the numerical methods are Taylor series and linear algebra. Based on the authors' years of experience, most materials on the text are tied to those elements in a unified manner.

Readership: Researchers, professionals, academics, undergraduate and graduate students.

300pp	**Sep 2022**	
978-981-127-728-3(pbk)	**US$58**	**£50**
978-981-125-525-0	**US$98**	**£85**
978-981-125-526-7(ebook)	**US$157**	**£140**

RECENT DEVELOPMENTS IN STRUCTURAL HEALTH MONITORING AND ASSESSMENT — OPPORTUNITIES AND CHALLENGES

Bridges, Buildings and Other Infrastructures

edited by **Achintya Haldar** *(University of Arizona, USA)* & **Abdullah Al-Hussein** *(University of Basrah, Iraq)*

This is a follow up to *Health Assessment of Engineered Structures*. It incorporates the most recent developments in health assessment and monitoring of infrastructures covering several advanced conceptual frameworks, different types of sensors, and application potentials. Opportunities and challenges in theoretical, numerical, and experimental investigations generally overlooked in the profession are discussed. Also included are various types of Bayesian filtering concepts improving the commonly used techniques.

Readership: Advanced undergraduate and graduate students, academic/researchers and practitioners.

448pp	**Feb 2022**	
978-981-124-300-4	**US$148**	**£120**
978-981-124-301-1(ebook)	**US$237**	**£190**

A PRACTICAL GUIDE TO SCIENTIFIC AND TECHNICAL TRANSLATION

Publishing, Style and Terminology

by **James Brian Alexander Mitchell** & **Anca Irina Florescu-Mitchell** *(MERL-Consulting SAS, France)*

"In this entertaining book, authors provide valuable insights and friendly advice on scientific writing and technical translation. Although the book is intended for non-English professionals, some sections may be useful for amateurish native speakers as well." **Theyencheri Narayanan, Senior Scientist, European Synchrotron Radiation Facility, France**

Readership: Highly useful to scientists who are non-native speakers of English and who need to publish in English journals and apply for patents. Topics covered will appeal mostly to engineers, industrial scientists and researchers in the pure sciences. The book would also interest independent technical translators and students of translation.

188pp	**Feb 2022**	
978-981-124-314-1(pbk)	**US$28**	**£25**
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978-981-124-156-7(ebook)	**US$98**	**£80**

THE WORLD OF 5G

(In 5 Volumes)
Volume 1: Internet of Everything
Volume 2: Intelligent Manufacturing
Volume 3: Intelligent Home
Volume 4: Intelligent Transportation
Volume 5: Intelligent Medicine

by **Quan Xue** *(South China University of Technology, China)*, **Wenquan Che** *(South China University of Technology, China)*, **Jishun Guo** *(GAC Automotive R&D Center, China)*, **Wei Wu** *(Skyworth Group Co., Ltd, China)*, **Zhiqiang Xu** *(Guangzhou Hantele Communication Co. Ltd, China)*, **Wenhua Huang** *(Southern Medical University, China)* & **Haibin Lin** *(Affliated Hospital of Putian University, China)*
Editor-in-chief: **Quan Xue** *(South China University of Technology, China)*

5G is becoming a critically important supporting technology for industrial evolvement.

The World of 5G series consists of five salient volumes — Internet of Everything, Intelligent Manufacturing, Intelligent Home, Intelligent Transportation, and Intelligent Medicine. Aim to capture new opportunities brought by 5G, this compendium set focuses on the key technologies, requirements, users' experiences, industry applications, and industrial reforms from the perspective of experts, and comprehensively introduces the related knowledge of 5G.

These reference volumes inform readers the essences of 5G, potential changes to the development of public life and society brought by 5G, as well as the potential security and risks such as the legal, moral and ethical aspects. The set also prominently reflects the latest business status in different industrial and social fields, and the great changes that follow.

Readership: Researchers and practitioners in the fields of 5G. General readers who are interested in the fields of 5G, undergraduate students.

736pp	**May 2022**	
978-981-125-017-0(Set)	**US$320**	**£255**
978-981-125-018-7(Set)(ebook)	**US$512**	**£410**

SIGNALS, INSTRUMENTATION, CONTROL, AND MACHINE LEARNING

An Integrative Introduction

by **Joseph Bentsman** *(University of Illinois at Urbana-Champaign, USA)*

This book stems from a unique and a highly effective approach to introducing signal processing, instrumentation, diagnostics, filtering, control, system integration, and machine learning. It presents the interactive industrial grade software testbed of mold oscillator that captures the distortion induced by beam resonance and uses this testbed as a virtual lab to generate input-output data records that permit unravelling complex system behavior, enhancing signal processing, modeling, and simulation background, and testing controller designs.

Readership: Researchers, professionals, academics, undergraduate and graduate students in mechanical engineering, electrical & electronic engineering, systems engineering and industrial engineering.

844pp	**Jul 2022**	
978-981-125-231-0(pbk)	**US$98**	**£80**
978-981-125-186-3	**US$198**	**£175**
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INTERNATIONAL JOURNAL OF NEURAL SYSTEMS (IJNS)

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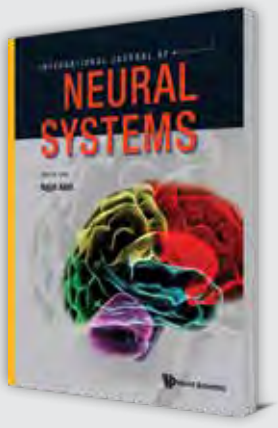

Editor-in-Chief: Hojjat Adeli
(The Ohio State University, USA)

This is a bimonthly peer-reviewed journal which covers information processing in natural and artificial neural systems. The journal presents a fresh, undogmatic attitude towards this multi-disciplinary field, aiming to be a forum for novel ideas and improved understanding of collective and cooperative phenomena in systems with computational capabilities.

Abstracting/Indexing: Academic OneFile | Academic Search Complete/ Elite/ Premier | Applied Science & Technology Source Ultimate | Baidu | CNKI | CnpLINKer | Compendex | CompuMath Citation Index | Computer Abstracts | CrossRef | CSA Neurosciences Abstracts | Current Contents®/Engineering, Computing, and Technology | DBLP Computer Science Bibliography | Ebsco Discovery Service | EBSCO Electronic Journal Service (EJS) | ExLibris Primo Central | Google Scholar | INSPEC | io-port.net | ISI Alerting Services | J-Gate | Journal Citation Reports/Science Edition | Naver | NSTL - National Science and Technology Libraries | OCLC WorldCat® | ProQuest SciTech Premium Collection | PubMed | Science & Technology Collection | Science Citation Index Expanded | Scopus | The Summon® Service | WanFang Data.

JOURNAL OF MEDICAL ROBOTICS RESEARCH (JMRR)

Indexed in Scopus | Indexed in Embase

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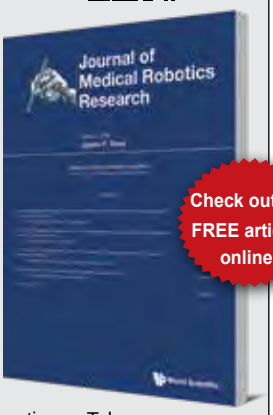

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Editor-in-Chief: Jaydev P. Desai
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Medical robotics has been progressively revolutionizing treatment for at least the past two decades. The *Journal of Medical Robotics Research (JMRR)* invites fundamental contributions to all areas of medical robotics including clinical evaluation studies. The journal is primarily aimed towards bringing the scientific and technological developments as well as clinical evaluation studies in the area of medical robotics to a wider robotics and clinical audience.

Areas of discussion include: • Robot-assisted Surgery • Image-guided Interventions • Rehabilitation Robotics • Assistive Robotics • Surgical simulation • Image-guided Diagnosis and Therapy • Nano-scale and micro-scale Interventions • Telesurgery • Haptics for Medical Robotics • Smart instrumented tools for surgery • Surgical Navigation • Surgical Workflow • Wearable Rehabilitation Systems

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INTERNATIONAL JOURNAL OF MODELING, SIMULATION, AND SCIENTIFIC COMPUTING (IJMSSC)

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***IMPACT FACTOR: 1.2**

This is a quarterly journal which deals with the fields of system modeling, simulation and scientific computing. The scope of the journal covers, but is not limited to:

- Modeling theory and methodology for complex systems, system simulation theory and methodology
- Complex applications of high level simulation languages, Multi-parameter Optimization in simulation
- Verification, validation and accreditation of theory and technology
- Finite element methods, finite difference methods, Approximation theory
- Distributed/High-Performance/Pervasive/Grid/Cloud Computing, Bioinformatics/Data-Mining, High Performance simulation technology
- Computational electromagnetics, electrodynamics, fluid dynamics, computational heat, mass, and momentum transfer
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- Simulation language methodology, supporting platforms, application techniques

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INTERNATIONAL JOURNAL OF COMPUTATIONAL METHODS (IJCM)

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Chief Editor: G R Liu *(University of Cincinnati, USA)*

The purpose of this journal is to provide a unique forum for the fast publication and rapid dissemination of original research results and innovative ideas on the state-of-the-art on computational methods. The methods should be innovative and of high scholarly, academic and practical value.

The journal is devoted to all aspects of modern computational methods and the articles can involve theory, algorithm, programming, coding, numerical simulation and/or novel application of computational techniques to problems in engineering, science, and other disciplines related to computations. The journal places a great emphasis on creativity, novelty and innovation of computational methods. It aims to become the major platform that archives the history of the technical development of new generations of computational methods.

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UNMANNED SYSTEMS (US)

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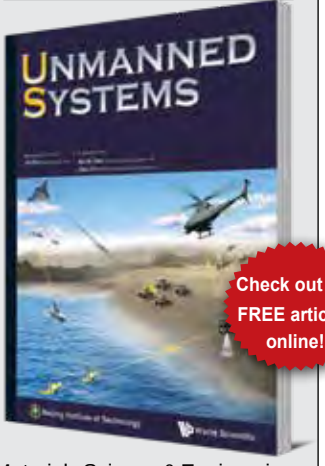

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Managing Editor-in-Chief: Jie Chen *(Tongji University, China)*

Editors-in-Chief: Ben M. Chen *(Professor, Chinese University of Hong Kong, China)* & **Lihua Xie** *(Professor, Nanyang Technological University, Singapore)*

Unmanned Systems (US) aims to cover all subjects related to the development of automatic machine systems, which include advanced technologies in unmanned hardware platforms (aerial, ground, underwater and unconventional platforms), unmanned software systems, energy systems, modeling and control, communications systems, computer vision systems, sensing and information processing, navigation and path planning, computing, information fusion, multi-agent systems, mission management, machine intelligence, artificial intelligence, and innovative application case studies.

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GUIDANCE, NAVIGATION AND CONTROL (GNC)

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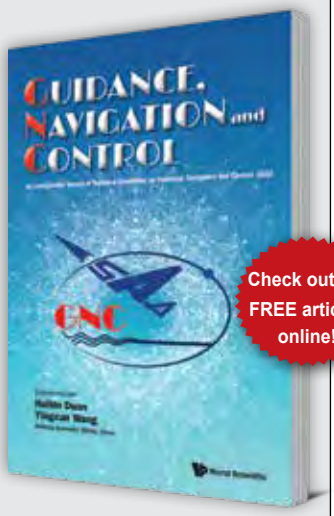
Editors-in-Chief: Haibin Duan & **Yingxun Wang** *(Beihang University, China)*



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Guidance, Navigation and Control (GNC) will report on advances in the understanding and utilization of guidance, navigation and control theories, technologies and systems. The journal serves as a platform for academic exchange by experts, scholars and researchers in these fields. The following subjects are of particular interest to the journal:

- Modeling, analysis and design of dynamics, control and guidance systems
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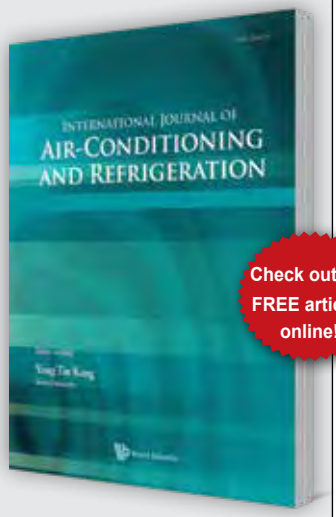
- Theoretical and empirical research in guidance, navigation and control technologies
- Application of guidance, navigation and control technologies to real-world problems

Abstracting/Indexing: Baidu | CNKI Scholar | CnpLINKer | CrossRef | Ebsco Discovery Service | EBSCO Electronic Journal Service (EJS) | ExLibris Primo Central | Google Scholar | J-Gate | Naver | NSTL - National Science and Technology Libraries | OCLC WorldCat® | The Summon® Service.

INTERNATIONAL JOURNAL OF AIR-CONDITIONING AND REFRIGERATION (IJACR)

https://www.worldscientific.com/ijacr

Editor-in-Chief: Yong Tae Kang *(Korea University, Korea)*



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INTERNATIONAL JOURNAL OF STRUCTURAL STABILITY AND DYNAMICS (IJSSD)

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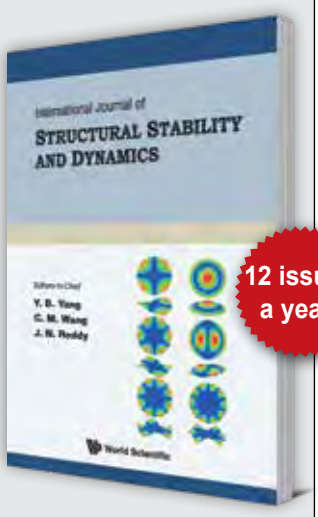

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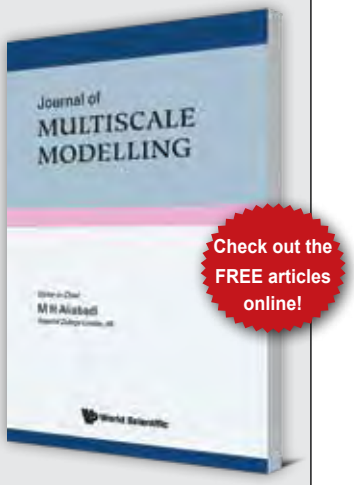

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The journal has as its objective the publication and wide electronic dissemination of innovative and consequential research in applied mechanics. IJAM welcomes high-quality original research papers in all aspects of applied mechanics from contributors throughout the world. The journal aims to promote the international exchange of new knowledge and recent development information in all aspects of applied mechanics. In addition to covering the classical branches of applied mechanics, namely solid mechanics, fluid mechanics, thermodynamics, and material science, the journal also encourages contributions from newly emerging areas such as biomechanics, electromechanics, the mechanical behavior of advanced materials, nanomechanics, and many other inter-disciplinary research areas in which the concepts of applied mechanics are extensively applied and developed.

It explores analytical, computational and experimental progresses in all the above mentioned areas. Types of papers accepted include: • Review articles on special topics of general interest • Original research papers • Notes and communications • Book reviews • Other special topics of general interest in this area.

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The aims of this journal are to provide an international forum for disseminating state-of-the-art information in the fields of Theoretical and Computational Acoustics. Topics covered by this journal include research and tutorial contributions in OCEAN ACOUSTICS (a subject of active research in relation with sonar detection and the design of noiseless ships), SEISMO-ACOUSTICS (of concern to earthquake science and engineering, and also to those doing underground prospection like searching for petroleum), AEROACOUSTICS (which includes the analysis of noise created by aircraft), COMPUTATIONAL METHODS, and SUPERCOMPUTING. In addition to the traditional issues and problems in computational methods, the journal also considers theoretical research acoustics papers which lead to large-scale scientific computations.

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Smart Manufacturing focuses on state-of-the-art manufacturing and its integration with enabling technologies in the implementation of intelligent manufacturing. The journal covers a broad scope, comprising smart and functional materials (material development), smart design (structure design and optimization), smart manufacturing (advanced manufacturing process development, digital twin, etc.), and smart factories (supply chain). Topics of particular interest include, but are not limited to, (1) 3D/4D printing, (2) digital manufacturing, (3) nature-inspired materials and manufacturing, (4) micro-/nanomaterials and manufacturing, (5) IoT for manufacturing, (6) cyber security for manufacturing, (7) adaptive and reconfigurable manufacturing, (8) green and sustainable materials and manufacturing, and (9) design methodologies for smart and functional materials and manufacturing.

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The *World Scientific Annual Review of Biomechanics* covers biomechanics of all levels of biological systems, from cells, tissues, organs to systems, such as cardiovascular and respiratory, neural, muscular and skeletal systems, and from fundamental mechanisms to translational and clinical applications such as biofluids, orthopedics, prosthesis and implants, rehabilitation, prosthetics and orthotics, sports injuries and performance, and medical devices. Theoretical, modeling and experimental methodologies are included.

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✔	Title	Page
	ACOUSTIC METAMATERIALS AND WAVE CONTROL	6
	ADVANCED LIQUID METAL COOLING FOR CHIP, DEVICE AND SYSTEM	12
	ADVANCED WIND TURBINES	10
	BIOENGINEERING FLUID MECHANICS	4
	CASUAL CALCULUS: A FRIENDLY STUDENT COMPANION - VOLUME 3	13
	CHANGE AND CHALLENGE IN HUMAN STRUCTURE - SIXTY YEARS ON: FROM CUTTING AND COUNTING, THROUGH MATHEMATICS, MECHANICS, MOLECULES AND MODELLING, TO BRAIN AND BEHAVIOUR!	10
	CO-DESIGN AND MODELLING FOR ADVANCED INTEGRATION AND PACKAGING: MANUFACTURING AND RELIABILITY	8
	COASTS AND ESTUARIES: MANAGEMENT AND ENGINEERING	11
	COASTS AND ESTUARIES: MANAGEMENT AND ENGINEERING	12
	COMPUTATIONAL GEOMETRY WITH INDEPENDENT AND DEPENDENT UNCERTAINTIES	13
	DENSIFICATION IMPACT ON RAW, CHEMICALLY AND THERMALLY PRETREATED BIOMASS: PHYSICAL PROPERTIES AND BIOFUELS PRODUCTION	5
	DESIGN FOR SIX SIGMA FOR ENGINEERS	5
	DIFFICULT DYNAMICS CONCEPTS BETTER EXPLAINED: PRINCIPLES AND APPLICATIONS	13
	ELEMENTARY MECHANICS (IN 2 VOLUMES)	9
	FLUID GAUGE THEORY: NEW PERSPECTIVES ON FLUID MECHANICS FROM THEORETICAL PHYSICS	9
	GLOBAL SUPPLY CHAINS IN A GLOCAL WORLD: THE IMPACT OF COVID-19 AND DIGITALISATION	6
	HANDBOOK OF SOLAR THERMAL TECHNOLOGIES: CONCENTRATING SOLAR POWER AND FUELS (IN 3 VOLUMES)	5
	HANDBOOK ON MECHANICS OF INELASTIC SOLIDS - VOLUME 1: PLASTICITY, CREEP AND VISCOUS DEFORMATION	7
	HOW TO DERIVE A FORMULA - VOLUME 2: FURTHER ANALYTICAL SKILLS AND METHODS FOR PHYSICAL SCIENTISTS	11
	IMMERSED METHODS FOR COUPLED CONTINUA	10
	INTRODUCTION OF SUPER-SPEED RAIL	5
	MATHEMATICAL METHODS AND MODELS IN COMPOSITES (SECOND EDITION)	7
	MECHANICS OF MATERIALS: A FRIENDLY APPROACH	11
	MODERN COURSE IN UNIVERSITY PHYSICS, A: NEWTONIAN MECHANICS, OSCILLATIONS & WAVES, ELECTROMAGNETISM	9
	NANOPARTICLE REINFORCED COMPOSITES FOR STRUCTURAL APPLICATIONS	7
	NONLINEAR FINITE ELEMENT METHODS: EXTREME AND ACCIDENTAL CONDITIONS	8
	NONLINEAR THEORY OF ELASTICITY: APPLICATIONS IN BIOMECHANICS (REVISED EDITION)	4
	NONLINEAR WAVES AND INVERSE SCATTERING TRANSFORM	10
	NONLOCAL CONTINUUM DAMAGE AND PLASTICITY: THEORY AND COMPUTATIONS	7
	NUMERICAL METHODS FOR ENGINEERS: A PRACTICAL APPROACH	13
	NUMERICAL MODELING OF WATER WAVES IN COASTAL AND OCEAN ENGINEERING	11
	PRACTICAL DESIGN GUIDE FOR COASTAL RUBBLE MOUND STRUCTURES, A	12
	PRACTICAL GUIDE TO SCIENTIFIC AND TECHNICAL TRANSLATION, A: PUBLISHING, STYLE AND TERMINOLOGY	13
	PRINCIPLES OF RENEWABLE ENERGY ENGINEERING WITH WORKED EXAMPLES	5
	PROBLEMS AND SOLUTIONS IN UNIVERSITY PHYSICS: NEWTONIAN MECHANICS, OSCILLATIONS & WAVES, ELECTROMAGNETISM	9
	QUALITY MANAGEMENT ESSENTIALS	6
	RECENT DEVELOPMENTS IN STRUCTURAL HEALTH MONITORING AND ASSESSMENT - OPPORTUNITIES AND CHALLENGES: BRIDGES, BUILDINGS AND OTHER INFRASTRUCTURES	13
	ROBOTICS: FROM MANIPULATOR TO MOBILEBOT	12
	SIGNALS, INSTRUMENTATION, CONTROL, AND MACHINE LEARNING: AN INTEGRATIVE INTRODUCTION	14
	SMART STRUCTURES: FROM CONCEPTS AND APPLICATIONS	10
	SOLVED PROBLEMS IN TRANSPORT PHENOMENA: ENERGY TRANSFER	4
	SOLVED PROBLEMS IN TRANSPORT PHENOMENA: MOMENTUM TRANSFER	4
	STIRLING AND THERMAL-LAG ENGINES: MOTIVE POWER WITHOUT THE CO2	5
	SYNCHRONIZATION OF SYSTEMS WITH TIME-DELAYED COUPLING	9
	SYSTEM SUSTAINMENT: ACQUISITION AND ENGINEERING PROCESSES FOR THE SUSTAINMENT OF CRITICAL AND LEGACY SYSTEMS	6
	TENSOR ALGEBRA AND ANALYSIS FOR ENGINEERS: WITH APPLICATIONS TO DIFFERENTIAL GEOMETRY OF CURVES AND SURFACES	8
	THERMAL ENERGY STORAGE: FROM FUNDAMENTALS TO APPLICATIONS	8
	TRIBO-ELECTROSTATICS: FUNDAMENTALS, CHALLENGES AND PERSPECTIVES	8
	WASTE HEAT RECOVERY: PRINCIPLES AND INDUSTRIAL APPLICATIONS	12
	WAVE DYNAMICS	12
	WEAR IN ADVANCED ENGINEERING APPLICATIONS AND MATERIALS	6
	WORLD OF 5G, THE - VOLUME 2: INTELLIGENT MANUFACTURING	14

Author Index

Author	Page
Abu Al-rub, Rashid K	7
Al-hussein, Abdullah Abdulamir Abdullah	13
Aliabadi, M H Ferri	6
Bai, Yong	8
Bailey, Christopher	8
Baz, Amr M	10
Benselama, Adel M	13
Bentsman, Joseph	14
Cai, Zixing	12
Chakraverty, Snehashish	12
Che, Wenquan	14
Chou, Mabel Cheng-feng	6
Chua, Ernest Kian Jon	8
Dascalescu, Lucian	8
Davidson, Jane H	5
Dhanak, Vinod R	7
Florescu-mitchell, Anca Irina	14
Gitik, Rivka	13
Goh, Puay Guan	6
Guo, Jishun	14
Haldar, Achintya	13
Han, Fuxiang	9
Higuera, Pablo	11
Ho, Cliff K	5
Hu, Gengkai	6
Hu, Jie	11
Hu, Matthew	5
Hu, Qizhou	5
Huang, Wenhua	14
Hung, Tin-kan	4
Joskowicz, Leo	13
Kambe, Tsutomu (jixin)	9
Karunakar, Perumandla	12
Kayupov, Malik	5
Kornyshev, Alexei A	11
Krishnamoorthi, Sivalingam	10
Kumar, Palanisamy Mohan	10
Kumar, Prashant	11
Kuo, Spencer P	10
Lee, Dominic J O'	11
Lim, Teik-cheng	10
Lin, Haibin	14
Liu, Jing	12
Lu, Hua	8
Lucyshyn, William	6
Lungu, Mihai	8
Luther, Kenneth	13
Mahfuz, Hassan	7
Mantic, Vladislav	7
Mitchell, James Brian Alexander	14
Mohamad, Abdulmajeed A	13
Mohammad, Louay A	12
Murali, K	12
Nijmeijer, Henk	9
Oguchi, Toshiki	9
Organ, Allan J	11
Organ, Allan J	5
Oxnard, Charles	10
Paik, Jeom-kee	8
Papastavridis, John G	9
Popov, Ivan	6
Prabakaran, Vivekh	8
Rangaiah, Gade Pandu	12
Reddy, Chirla Chandra Sekhara	12
Rees, David W A	7
Reeve, Dominic	11
Rodriguez-tembleque, Luis	6
Sandborn, Peter	6
Sannasiraj, Sannasi Annamalaisamy	12
Sheh, Michael	5
Soh, Alexander Kang Yang	8
Steur, Erik	9
Stoyanov, Stoyan	8
Sundar, Vallam	12
Taber, Larry A	4
Tosun, Ismail	4
Tu, Jay F	13
Tumuluru, Jaya Shankar	4
Vannucci, Paolo	8
Vazquez, Jesus	6
Wang, Jinghua	11
Wang, X Sheldon	10
Wijeysundera, Nihal E	5
Wu, Wei	14
Xu, Zhiqiang	14
Xue, Quan	14
Yang, Kai	5
Yang, Zhengtong	11
Zeghloul, Thami	8
Zhang, Lucy T	10
Zhou, Xiaoming	6

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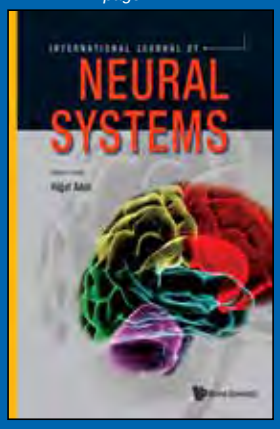
page 14


page 14

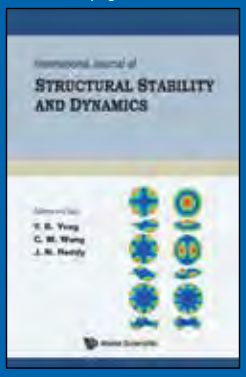
page 15

page 15

page 15

page 16

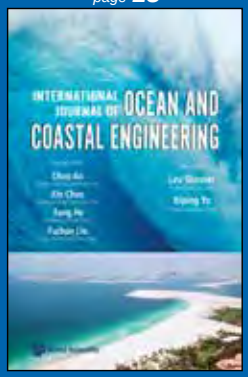
page 16

page 16


page 17

page 17

page 17

page 18


page 18

page 18

page 19

NEW page 19

NEW page 19

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