

## Applied Engineering Physics Cornell Aep

A classic textbook on the principles of Newtonian mechanics for undergraduate students, accompanied by numerous worked examples and problems.

Water wave kinematics is a central field of study in ocean and coastal engineering. The wave forces on structures as well as sand erosion both on coastlines and in the ocean are to a large extent governed by the local distribution of velocities and accelerations of the water particles. Our knowledge of waves has generally been derived from measurements of the water surface elevations. The reason for this is that the surface elevations have been of primary interest and fairly cheap and reliable instruments have been developed for such measurements. The water wave kinematics has then been derived from the surface elevation information by various theories. However, the different theories for the calculation of water particle velocities and acceleration have turned out to give significant differences in the calculated responses of structures. In recent years new measurement techniques have made it possible to make accurate velocity measurements. Hence, the editors deemed it to be useful to bring together a group of experts working actively as researchers in the field of water wave kinematics. These experts included theoreticians as well as experimentalists on wave kinematics. It was also deemed useful to include experts on the response of structures to have their views from a structural engineering point of view on what information is really needed on water wave kinematics.

Effective coastal engineering is expensive, but it is not as costly as neglect or ineffective intervention. Good practice needs to be based on sound principles, but theoretical work and modelling also need to be well grounded in practice, which is continuously evolving. Conceptual and detailed design has been advanced by new industry publications since the publication of the second edition. This third edition provides a number of updates: the sections on wave overtopping have been updated to reflect changes brought in with the recently issued EurOtop II manual; a detailed worked example is given of the calculation of extreme wave conditions for design; additional examples have been included on the reliability of structures and probabilistic design; the method for tidal analysis and calculation of amplitudes and phases of harmonic constituents from water level time series has been introduced in a new appendix together with a worked example of harmonic analysis; and a real-life example is included of a design adapting to climate change. This book is especially useful as an information source for undergraduates and engineering MSc students specializing in coastal engineering and management. Readers require a good grounding in basic fluid mechanics or engineering hydraulics, and some familiarity with elementary statistical concepts.

This book provides a holistic, interdisciplinary overview of offshore wind energy, and is a must-read for advanced researchers. Topics, from the design and analysis of future turbines, to the decommissioning of wind farms, are covered. The scope of the work ranges from analytical, numerical and experimental advancements in structural and fluid mechanics, to novel developments in risk, safety & reliability engineering for offshore wind. The core objective of the current work is to make offshore wind energy more competitive, by improving the reliability, and operations and maintenance (O&M) strategies of wind turbines. The research was

carried out under the auspices of the EU-funded project, MARE-WINT. The project provided a unique opportunity for a group of researchers to work closely together, undergo multidisciplinary doctoral training, and conduct research in the area of offshore wind energy generation. Contributions from expert, external authors are also included, and the complete work seeks to bridge the gap between research and a rapidly-evolving industry.

This book provides the reader with the mathematical framework required to fully explore the potential of small quantum information processing devices. As decoherence will continue to limit their size, it is essential to master the conceptual tools which make such investigations possible. A strong emphasis is given to information measures that are essential for the study of devices of finite size, including Rényi entropies and smooth entropies. The presentation is self-contained and includes rigorous and concise proofs of the most important properties of these measures. The first chapters will introduce the formalism of quantum mechanics, with particular emphasis on norms and metrics for quantum states. This is necessary to explore quantum generalizations of Rényi divergence and conditional entropy, information measures that lie at the core of information theory. The smooth entropy framework is discussed next and provides a natural means to lift many arguments from information theory to the quantum setting. Finally selected applications of the theory to statistics and cryptography are discussed. The book is aimed at graduate students in Physics and Information Theory. Mathematical fluency is necessary, but no prior knowledge of quantum theory is required.

The Who's Who in Fluorescence 2009 is the 7 volume of the Who's who series. The previous six volumes (2003 – 2008) have been very well received by the fluorescence community, with 1000's of copies being distributed around the world, through conferences and workshops, as well as through internet book sites. In addition, the Institute of Fluorescence (<http://theinstituteoffluorescence.com/>) mailed 100's of copies of the 2008 volume to contributors around the world. This new 2009 volume features some 419 entries from no fewer than 41 countries worldwide, as compared to 418 entries (38 different countries) in 2008 and 405 entries in the 2007 volume, respectively. We have received 29 new entries this year, and deleted 25 entries that were not updated by contributors from past years. In 2008, 129 AIM numbers were submitted as compared to 106 in 2007. This year the number has risen again to 136 AIM numbers submitted. This year we also see the introduction of the h-index number listing, a publication statistic provided by the Thompson's ISI Web of Science. Some 42 contributors provided their h-numbers. In 2009 we also see a continued and strong company support, in light of the current world economic climate, which will enable us to further disseminate the volume in 2009– 2010. In this regard we especially thank the instrumentation companies for their continued support, where without their financial contributions, it is likely that the volume would not be the success it is today.

Given the strong current attention of orthopaedic, biomechanical, and biomedical engineering research on translational capabilities for the diagnosis, prevention, and treatment of clinical disease states, the need for reviews of the state-of-art and current needs in orthopaedics is very timely. Orthopaedic Biomechanics provides an in-depth review of the current knowledge of orthopaedic biomechanics across all tissues in the musculoskeletal system, at all size scales, and with direct relevance to engineering and clinical applications. Discussing the relationship between mechanical loading, function, and biological performance, it first reviews

basic structure-function relationships for most major orthopedic tissue types followed by the most-relevant structures of the body. It then addresses multiscale modeling and biologic considerations. It concludes with a look at applications of biomechanics, focusing on recent advances in theory, technology and applied engineering approaches. With contributions from leaders in the field, the book presents state-of-the-art findings, techniques, and perspectives. Much of orthopaedic, biomechanical, and biomedical engineering research is directed at the translational capabilities for the "real world". Addressing this from the perspective of diagnostics, prevention, and treatment in orthopaedic biomechanics, the book supplies novel perspectives for the interdisciplinary approaches required to translate orthopaedic biomechanics to today's real world.

th The Who's Who in Fluorescence 2008 is the 6 Volume of the Who's Who Series. The previous five volumes (2003 - 2007) have been very well received indeed, with 1000's of copies being distributed around the world, through conferences and workshops, as well as through internet book sites. Recently, the WWiF Volume was th disseminated at the 10 MAFS conference in Salzburg, Austria. The Volume was very well received indeed. We subsequently thank Professor Otto Wolfbeis for help in disseminating the Volume at the MAFS venue. This new 2008 Volume features some 418 entries from no fewer than 38 countries worldwide, as compared to 405 entries (35 different countries) in 2007 and 366 entries in the 2006 volume, respectively. We have received 31 new entries this year, and deleted 18 entries that were not updated by contributors from past years. In 2007 some 106 AIM numbers were submitted and listed, 88 the year before. This year, the number submitted has risen again to 129 entries, greater than 30 % of all contributors. In addition, the Volume has a continued strong company support, which will enable us to further disseminate the Volume in 2008-2009. In this regard we especially thank the instrumentation companies for their continued support, where without their financial contributions, it is likely that the Volume would not be the success it is today. The new WWiF website was also launched in August 2007. The website features all the latest WWiF templates and submission information.

Essentials of Ecology presents introductory ecology in an accessible, state-of-the-art format designed to cultivate the novice student's understanding of, and fascination with, the natural world. In a concise, engaging style, this text outlines the essential principles of ecology from the theoretical fundamentals to their practical applications. Full color artwork, simple pedagogical features and a wide range of timely examples make this book an ideal introduction to ecology for students at all levels. The second edition of this successful text provides expanded coverage and over 400 references including 100 new examples reflecting the vibrancy of the field. More than a simple update, the new edition also features new artwork

<http://www.blackwellpublishing.com/townsend/Images.htm>, an enhanced design, and additional integrated applications to make Essentials of Ecology up-to-date and relevant. Outstanding features of the second edition of Essentials of Ecology include: ? Dedicated website – study resources and web research questions provide students and instructors with an enhanced, interactive experience of the book [www.blackwellpublishing.com/townsend](http://www.blackwellpublishing.com/townsend) ? Key Concepts – summarized at the beginning of each chapter ? Unanswered questions – highlighted throughout, emphasizing that in ecology, as in any science, we have much left to learn ? History boxes – outlining key landmarks in the development of ecology ? Quantitative boxes – allowing mathematical aspects of

ecology to be explained thoroughly without interrupting the flow of the text ? Topical EConcerns boxes – highlighting ethical, social and political questions in ecology ? Review questions – included at the end of each chapter

Mathematical Physics Applied Mathematics for Scientists and Engineers John Wiley & Sons

The Journal of Fluorescence's fourth Who's Who directory is to publish the names, contact details, specialty keywords, and a brief description of scientists employing fluorescence methodology and instrumentation in their working lives. In addition, the directory will provide company contact details with a brief list of fluorescence-related products. The directory will be edited by Chris D. Geddes and Joseph R. Lakowicz, editor and founding editor of the Journal of Fluorescence.

This book examines the push and pull of factors contributing to and constraining conversion of STEM (science, technology, engineering and math) education programs into STEAM (science, technology, engineering, math and arts) education programs. The chapters in this book offer thought-provoking examples, theory, and suggestions about the advantages, methods and challenges involved in making STEM to STEAM conversions, at levels ranging from K12 through graduate university programs. A large driving force for STEM-to-STEAM conversions is the emerging awareness that the scientific workforce finds itself less than ideally prepared when engaging with so-called 'wicked problems' – the complex suite of emerging, multifaceted issues such as global climate change, social injustice, and pandemic diseases. Dealing with these issues requires cross-disciplinary expertise and the ability to insert technical and scientific understanding effectively into areas of public planning and policy. The different models and possibilities for STEAM, as the next phase of the STEM revolution, laid out in this book will promote research and further our understanding of STEAM as a forward-thinking approach to education. Gillian Roehrig, STEM Education, University of Minnesota, USA The ideal teacher sees opportunities for integrating ideas from multiple disciplines into every lesson. This book offers many worthwhile suggestions on how to do that deliberately and systematically George DeBoer, Project 2061 of the American Association for the Advancement of Science, USA For the last several years, calls for expanding STEM education have grown, but so too have concerns about technocratic approaches to STEM. This volume challenges the community to consider broader views on STEM by focusing on the place of arts education within this movement. The chapters offer much needed, new perspectives on the (re)integration of the arts and sciences Troy Sadler, School of Education, University of North Carolina, USA

Semiconductors and Semimetals has distinguished itself through the careful selection of well-known authors, editors, and contributors. Originally widely known as the "Willardson and Beer" Series, it has succeeded in publishing numerous landmark volumes and chapters. The series publishes timely, highly relevant volumes intended for long-term impact and reflecting the truly interdisciplinary nature of the field. The volumes in Semiconductors and Semimetals have been and will continue to be of great interest to physicists, chemists, materials scientists, and device engineers in academia, scientific laboratories and modern industry. Written and edited by internationally renowned experts Relevant to a wide readership: physicists, chemists, materials scientists, and device engineers in academia, scientific laboratories and modern industry

"Infinitely moving and powerful, just dead-on right, and absolutely original." —Joan Didion Since its publication in 1996, Holy Land

has become an American classic. In "quick, translucent prose" (Michiko Kakutani, New York Times) that is at once lyrical and unsentimental, D. J. Waldie recounts growing up in Lakewood, California, a prototypical post-World War II suburb. Laid out in 316 sections as carefully measured as a grid of tract houses, Holy Land is by turns touching, eerie, funny, and encyclopedic in its handling of what was gained and lost when thousands of blue-collar families were thrown together in the suburbs of the 1950s. An intensely realized and wholly original memoir about the way in which a place can shape a life, Holy Land is ultimately about the resonance of choices—how wide a street should be, what to name a park—and the hopes that are realized in the habits of everyday life.

A collection of offbeat, entertaining and primarily nontechnical essays on physics and those who practice it, from eminent theoretical physicist N. David Mermin. Bringing together for the first time all thirty of his columns published in Physics Today's Reference Frame series from 1988 to 2009, with updating commentary, this humorous and unusual volume includes thirteen other essays, many of them previously unpublished. Mermin's lively and penetrating writing illuminates a broad range of topics, from the implications of bad spelling in a major science journal, to the crises of science libraries and scientific periodicals, the folly of scientific prizes and honors, the agony of getting funding, and how to pronounce 'quark'. His witty observations and insightful anecdotes gleaned from a lifetime in science will entertain physicists at all levels, as well as anyone else interested in science or scientists at the turn of the twenty-first century.

The bestselling beginner Arduino guide, updated with new projects! Exploring Arduino makes electrical engineering and embedded software accessible. Learn step by step everything you need to know about electrical engineering, programming, and human-computer interaction through a series of increasingly complex projects. Arduino guru Jeremy Blum walks you through each build, providing code snippets and schematics that will remain useful for future projects. Projects are accompanied by downloadable source code, tips and tricks, and video tutorials to help you master Arduino. You'll gain the skills you need to develop your own microcontroller projects! This new 2nd edition has been updated to cover the rapidly-expanding Arduino ecosystem, and includes new full-color graphics for easier reference. Servo motors and stepper motors are covered in richer detail, and you'll find more excerpts about technical details behind the topics covered in the book. Wireless connectivity and the Internet-of-Things are now more prominently featured in the advanced projects to reflect Arduino's growing capabilities. You'll learn how Arduino compares to its competition, and how to determine which board is right for your project. If you're ready to start creating, this book is your ultimate guide! Get up to date on the evolving Arduino hardware, software, and capabilities Build projects that interface with other devices—wirelessly! Learn the basics of electrical engineering and programming Access downloadable materials and source code for every project Whether you're a first-timer just starting out in electronics, or a pro looking to mock-up more

complex builds, Arduino is a fantastic tool for building a variety of devices. This book offers a comprehensive tour of the hardware itself, plus in-depth introduction to the various peripherals, tools, and techniques used to turn your little Arduino device into something useful, artistic, and educational. Exploring Arduino is your roadmap to adventure—start your journey today!

The Journal of Fluorescence's fifth Who's Who directory publishes the names, contact details, specialty keywords, and a brief description of scientists employing fluorescence methodology and instrumentation in their working lives. In addition, it provides company contact details with a brief list of fluorescence-related products.

Computational physics is a rapidly growing subfield of computational science, in large part because computers can solve previously intractable problems or simulate natural processes that do not have analytic solutions. The next step beyond Landau's First Course in Scientific Computing and a follow-up to Landau and Páez's Computational Physics, this text presents a broad survey of key topics in computational physics for advanced undergraduates and beginning graduate students, including new discussions of visualization tools, wavelet analysis, molecular dynamics, and computational fluid dynamics. By treating science, applied mathematics, and computer science together, the book reveals how this knowledge base can be applied to a wider range of real-world problems than computational physics texts normally address. Designed for a one- or two-semester course, A Survey of Computational Physics will also interest anyone who wants a reference on or practical experience in the basics of computational physics. Accessible to advanced undergraduates Real-world problem-solving approach Java codes and applets integrated with text Companion Web site includes videos of lectures

Cornell University is fortunate to have as its historian a man of Morris Bishop's talents and devotion. As an accurate record and a work of art possessing form and personality, his book at once conveys the unique character of the early university—reflected in its vigorous founder, its first scholarly president, a brilliant and eccentric faculty, the hardy student body, and, sometimes unfortunately, its early architecture—and establishes Cornell's wider significance as a case history in the development of higher education. Cornell began in rebellion against the obscurantism of college education a century ago. Its record, claims the author, makes a social and cultural history of modern America. This story will undoubtedly entrance Cornellians; it will also charm a wider public. Dr. Allan Nevins, historian, wrote: "I anticipated that this book would meet the sternest tests of scholarship, insight, and literary finish. I find that it not only does this, but that it has other high merits. It shows grasp of ideas and forces. It is graphic in its presentation of character and idiosyncrasy. It lights up its story by a delightful play of humor, felicitously expressed. Its emphasis on fundamentals, without pomposity or platitude, is refreshing. Perhaps most important of all, it achieves one goal that in the history of a living university is

both extremely difficult and extremely valuable: it recreates the changing atmosphere of time and place. It is written, very plainly, by a man who has known and loved Cornell and Ithaca for a long time, who has steeped himself in the traditions and spirit of the institution, and who possesses the enthusiasm and skill to convey his understanding of these intangibles to the reader." The distinct personalities of Ezra Cornell and first president Andrew Dickson White dominate the early chapters. For a vignette of the founder, see Bishop's description of "his" first buildings (Cascadilla, Morrill, McGraw, White, Sibley): "At best," he writes, "they embody the character of Ezra Cornell, grim, gray, sturdy, and economical." To the English historian, James Anthony Froude, Mr. Cornell was "the most surprising and venerable object I have seen in America." The first faculty, chosen by President White, reflected his character: "his idealism, his faith in social emancipation by education, his dislike of dogmatism, confinement, and inherited orthodoxy"; while the "romantic upstate gothic" architecture of such buildings as the President's house (now Andrew D. White Center for the Humanities), Sage Chapel, and Franklin Hall may be said to "portray the taste and Soul of Andrew Dickson White." Other memorable characters are Louis Fuertes, the beloved naturalist; his student, Hugh Troy, who once borrowed Fuertes' rhinoceros-foot wastebasket for illicit if hilarious purposes; the more noteworthy and the more eccentric among the faculty of succeeding presidential eras; and of course Napoleon, the campus dog, whose talent for hailing streetcars brought him home safely—and alone—from the Penn game. The humor in *A History of Cornell* is at times kindly, at times caustic, and always illuminating.

*Fundamentals and Applications of Nanophotonics* includes a comprehensive discussion of the field of nanophotonics, including key enabling technologies that have the potential to drive economic growth and impact numerous application domains such as ICT, the environment, healthcare, military, transport, manufacturing, and energy. This book gives readers the theoretical underpinnings needed to understand the latest advances in the field. After an introduction to the area, chapters two and three cover the essential topics of electrodynamics, quantum mechanics, and computation as they relate to nanophotonics. Subsequent chapters explore materials for nanophotonics, including nanoparticles, photonic crystals, nanosilicon, nanocarbon, III-V, and II-VI semiconductors. In addition, fabrication and characterization techniques are addressed, along with the importance of plasmonics, and the applications of nanophotonics in devices such as lasers, LEDs, and photodetectors. Covers electrodynamics, quantum mechanics and computation as these relate to nanophotonics Reviews materials, fabrication and characterization techniques for nanophotonics Describes applications of the technology such as lasers, LEDs and photodetectors

How a built environment that is robotic and interactive becomes an apt home to our restless, dynamic, and increasingly digital society. The relationship of humans to computers can no longer be represented as one person in a chair and one

computer on a desk. Today computing finds its way into our pockets, our cars, our appliances; it is ubiquitous—an inescapable part of our everyday lives. Computing is even expanding beyond our devices; sensors, microcontrollers, and actuators are increasingly embedded into the built environment. In *Architectural Robotics*, Keith Evan Green looks toward the next frontier in computing: interactive, partly intelligent, meticulously designed physical environments. Green examines how these “architectural robotic” systems will support and augment us at work, school, and home, as we roam, interconnect, and age. Green tells the stories of three projects from his research lab that exemplify the reconfigurable, distributed, and transfigurative environments of architectural robotics. The *Animated Work Environment* is a robotic work environment of shape-shifting physical space that responds dynamically to the working life of the people within it; *home+* is a suite of networked, distributed “robotic furnishings” integrated into existing domestic and healthcare environments; and *LIT ROOM* offers a simulated environment in which the physical space of a room merges with the imaginary space of a book, becoming “a portal to elsewhere.” How far beyond workstations, furniture, and rooms can the environments of architectural robotics stretch? Green imagines scaled-up neighborhoods, villages, and metropolises composed of physical bits, digital bytes, living things, and their hybrids. Not global but local, architectural robotics grounds computing in a capacious cyber-physical home.

This is the third Volume in a series of books devoted to the interdisciplinary area between mathematics and physics, all emanating from the Advanced Study Institutes held in Istanbul in 1970, 1972 and 1977. We believe that physics and mathematics can develop best in harmony and in close communication and cooperation with each other and are sometimes inseparable. With this goal in mind we tried to bring mathematicians and physicists together to talk and lecture to each other—this time in the area of nonlinear equations. The recent progress and surge of interest in nonlinear ordinary and partial differential equations has been impressive. At the same time, novel and interesting physical applications multiply. There is a unifying element brought about by the same characteristic nonlinear behavior occurring in very widely different physical situations, as in the case of “solitons,” for example. This Volume gives, we believe, a very good indication over all of this recent progress both in theory and applications, and over current research activity and problems. The 1977 Advanced Study Institute was sponsored by the NATO Scientific Affairs Division, The University of the Bosphorus and the Turkish Scientific and Technical Research Council. We are deeply grateful to these Institutions for their support, and to lecturers and participants for their hard work and enthusiasm which created an atmosphere of lively scientific discussions.

A complete road map to creating successful technical presentations Planning a technical presentation can be tricky. Does the audience know your subject area? Will you need to translate concepts into terms they understand? What sort of

visuals should you use? Will this set of bullets truly convey the information? What will your slides communicate to future users? Questions like these and countless others can overwhelm even the most savvy technical professionals. This full-color, highly visual work addresses the unique needs of technical communicators looking to break free of the bulleted slide paradigm. For those seeking to improve their presentations, the authors provide guidance on how to plan, organize, develop, and archive technical presentations. Drawing upon the latest research in cognitive science as well as years of experience teaching seasoned technical professionals, the authors cover a myriad of issues involved in the design of presentations, clearly explaining how to create slide decks that communicate critical technical information. Key features include: Innovative methods for archiving and documenting work through slides in the technical workplace Guidance on how to tailor presentations to diverse audiences, technical and nontechnical alike A plethora of color slides and visual examples illustrating various strategies and best practices Links to additional resources as well as slide examples to inspire on-the-job changes in presentation practices Slide Rules is a first-rate guide for practicing engineers, scientists, and technical specialists as well as anyone wishing to develop useful, engaging, and informative technical presentations in order to become an expert communicator. Find the authors at [techartsconsulting.com](http://techartsconsulting.com) or on Facebook at: SlideRulesTAC

The Who's Who in Fluorescence 2003 volume was published in November 2002. It featured some 312 personal entries from fluorescence workers all over the world. Initially we were unsure how useful the volume would be. However, it wasn't very long before we were inundated with requests for both bulk and personal orders. In addition a significant number of copies were freely distributed at conference venues, such as at the Biophysical Society meeting in San Antonio, Texas, March 2003, and at the Methods and Applications of Fluorescence Spectroscopy conference (MAFS) in Prague, Czech Republic, August 2003, where these two venues probably host the largest gathering of Fluorescence workers anywhere. Even when we were initially taking e-mail based submissions, contributors were freely commenting on what a useful resource they saw the volume as being. We subsequently shared these comments on the back outside cover of the 2003 volume. As well as individual scientists supporting the 2003 volume, the Fluorescence based Companies also played a key role, where without their financial support, the volume probably would not have the impact it currently has. As such, the Who's Who in Fluorescence 2003 has been a much bigger success than we ever envisaged. Subsequently, we now present the Who's Who in Fluorescence 2004 volume. The new volume features 359 personal entries from 35 countries around the world. In addition we have increased company support, which should enable us to distribute more copies at targeted venues in 2004.

"In most cases, the authors of the tributes are contemporaries or colleagues who had personal knowledge of the interests and engineering accomplishments of the deceased" from foreward.

In each generation, scientists must redefine their fields: abstracting, simplifying and distilling the previous standard topics to make room for new advances and methods. Sethna's book takes this step for statistical mechanics - a field rooted in physics and chemistry whose ideas and methods are now central to information theory, complexity, and modern biology. Aimed at advanced undergraduates and early graduate students in all of these fields, Sethna limits his main presentation to the topics that future mathematicians and biologists, as well as physicists and chemists, will find fascinating and central to their work. The amazing breadth of the field is reflected in the author's large supply of carefully crafted exercises, each an introduction to a whole field of study: everything from chaos through information theory to life at the end of the universe.

Starting in the early 1970s, a type of programmed cell death called apoptosis began to receive attention. Over the next three decades, research in this area continued at an accelerated rate. In the early 1990s, a second type of programmed cell death, autophagy, came into focus. Autophagy has been studied in mammalian cells for many years. The recent What sets this volume apart from other mathematics texts is its emphasis on mathematical tools commonly used by scientists and engineers to solve real-world problems. Using a unique approach, it covers intermediate and advanced material in a manner appropriate for undergraduate students. Based on author Bruce Kusse's course at the Department of Applied and Engineering Physics at Cornell University, *Mathematical Physics* begins with essentials such as vector and tensor algebra, curvilinear coordinate systems, complex variables, Fourier series, Fourier and Laplace transforms, differential and integral equations, and solutions to Laplace's equations. The book moves on to explain complex topics that often fall through the cracks in undergraduate programs, including the Dirac delta-function, multivalued complex functions using branch cuts, branch points and Riemann sheets, contravariant and covariant tensors, and an introduction to group theory. This expanded second edition contains a new appendix on the calculus of variation -- a valuable addition to the already superb collection of topics on offer. This is an ideal text for upper-level undergraduates in physics, applied physics, physical chemistry, biophysics, and all areas of engineering. It allows physics professors to prepare students for a wide range of employment in science and engineering and makes an excellent reference for scientists and engineers in industry. Worked out examples appear throughout the book and exercises follow every chapter. Solutions to the odd-numbered exercises are available for lecturers at [www.wiley-vch.de/textbooks/](http://www.wiley-vch.de/textbooks/).

The events of September 11, 2001 changed perceptions, rearranged national priorities, and produced significant new government entities, including the U.S. Department of Homeland Security (DHS) created in 2003. While the principal mission of DHS is to lead efforts to secure the nation against those forces that wish to do harm, the department also has responsibilities in regard to preparation for and response to other hazards and disasters, such as floods, earthquakes, and other "natural" disasters. Whether

in the context of preparedness, response or recovery from terrorism, illegal entry to the country, or natural disasters, DHS is committed to processes and methods that feature risk assessment as a critical component for making better-informed decisions. Review of the Department of Homeland Security's Approach to Risk Analysis explores how DHS is building its capabilities in risk analysis to inform decision making. The department uses risk analysis to inform decisions ranging from high-level policy choices to fine-scale protocols that guide the minute-by-minute actions of DHS employees. Although DHS is responsible for mitigating a range of threats, natural disasters, and pandemics, its risk analysis efforts are weighted heavily toward terrorism. In addition to assessing the capability of DHS risk analysis methods to support decision-making, the book evaluates the quality of the current approach to estimating risk and discusses how to improve current risk analysis procedures. Review of the Department of Homeland Security's Approach to Risk Analysis recommends that DHS continue to build its integrated risk management framework. It also suggests that the department improve the way models are developed and used and follow time-tested scientific practices, among other recommendations.

The 1999 international conference on Information Processing in Medical Imaging (IPMI '99) was the sixteenth in the series of biennial meetings and followed the successful meeting in Poultney, Vermont, in 1997. This year, for the first time, the conference was held in central Europe, in the historical Hungarian town of Visegrád, one of the most beautiful spots not only on the Danube Bend but in all Hungary. The place has many historical connections, both national and international. The castle was once a royal palace of King Matthias. In the middle ages, the Hungarian, Czech, and Polish kings met here. Recently, after the summit meeting of reestablished democracies in the area, it became a symbol for the cooperation between central European countries as they approached the European Union. It was thus also symbolic to bring IPMI, in the year of the 30th anniversary of its foundation, to this place, and organize the meeting with the close cooperation of local and traditional western organizers. It also provided a good opportunity to summarize briefly a history of IPMI for those who were new to the IPMI conference. This year we received 82 full paper submissions from all over the world. Of these, 24 were accepted as oral presentations. These were divided into 6 sessions. In spite of our efforts, it was found to be impossible to make these sessions fully balanced and homogeneous.

The Journal of Fluorescence's first Who's Who directory is to publish the names, contact details, specialty keywords and a brief description of scientists employing fluorescence methodology and instrumentation in their working lives. In addition the directory will provide company contact details with a brief list of fluorescence related products. Nothing like this has been published before for the Fluorescence field.

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