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Science Fiction by Scientists John Wiley & Sons

Semiconductor sensors patterned at the micron scale combined with custom-designed integrated circuits have revolutionized semiconductor radiation detector systems. Designs covering many square meters with millions of signal channels are now commonplace in high-energy physics and the technology is finding its way into many other fields, ranging from astrophysics to experiments at synchrotron light sources and medical imaging. This book is the first to present a comprehensive discussion of the many facets of highly integrated semiconductor detector systems, covering sensors, signal processing, transistors and circuits, low-noise electronics, and radiation effects. The diversity of design approaches is illustrated in a chapter describing systems in high-energy physics, astronomy, and astrophysics. Finally a chapter "Why things don't work" discusses common pitfalls. Profusely illustrated, this book provides a unique reference in a key area of modern science.

Theory and Applications Cambridge University Press

The masses of neutron stars are limited by an instability to gravitational collapse and an instability driven by gravitational waves limits their spin. Their oscillations are relevant to x-ray observations of accreting binaries and to gravitational wave observations of neutron stars formed during the coalescence of double neutron-star systems. This volume includes more than forty years of research to provide graduate students and researchers in astrophysics, gravitational physics and astronomy with the first self-contained treatment of the structure, stability and oscillations

of rotating neutron stars. This monograph treats the equations of stellar equilibrium; key approximations, including slow rotation and perturbations of spherical and rotating stars; stability theory and its applications, from convective stability to the r-mode instability; and numerical methods for computing equilibrium configurations and the nonlinear evolution of their oscillations. The presentation of fundamental equations, results and applications is accessible to readers who do not need the detailed derivations.

Pulsar Astronomy Springer Science & Business Media

The United States spends approximately $4 million each year searching for near-Earth objects (NEOs). The objective is to detect those that may collide with Earth. The majority of this funding supports the operation of several observatories that scan the sky searching for NEOs. This, however, is insufficient in detecting the majority of NEOs that may present a tangible threat to humanity. A significantly smaller amount of funding supports ways to protect the Earth from such a potential collision or "mitigation." In 2005, a Congressional mandate called for NASA to detect 90 percent of NEOs with diameters of 140 meters of greater by 2020. Defending Planet Earth: Near-Earth Object Surveys and Hazard Mitigation Strategies identifies the need for detection of objects as small as 30 to 50 meters as these can be highly destructive. The book explores four main types of mitigation including civil defense, "slow push" or "pull" methods, kinetic impactors and nuclear explosions. It also asserts that responding effectively to hazards posed by NEOs requires national and international cooperation. Defending Planet Earth: Near-Earth Object Surveys and Hazard Mitigation Strategies is a useful guide for scientists, astronomers, policy makers and engineers.

New Statesman Society Cambridge University Press

Ever since their invention in 1960, lasers have assumed tremendous importance in the fields of science, engineering and technology because of their use both in basic research and in various technological applications. Lasers: Theory and Applications 2nd Edition will provide a coherent presentation of the basic physics behind the working of the laser along with some of their most important applications. Numerical examples are scattered throughout the book for helping the student gain a better appreciation of the concepts and problems at the end of each chapter and provides the student a better understanding of the basics and help in applying the concepts to practical situations. This book serves as a text in a course on lasers and their applications for students majoring in various disciplines such as Physics, Chemistry and Electrical Engineering.

Science With The Cherenkov Telescope Array Pergamon Press

The handbook centers on detection techniques in the field of particle physics, medical imaging and related subjects. It is structured into three parts. The first one is dealing with basic ideas of particle detectors, followed by applications of these devices in high energy physics and other fields. In the last part the large field of medical imaging using similar detection techniques is described. The different chapters of the book are written by world experts in their field. Clear instructions on the detection techniques and principles in terms of relevant operation parameters for scientists and graduate students are given.Detailed tables and diagrams will make this a very useful handbook for the application of these techniques in many different fields like physics, medicine, biology and other areas of natural science.

Experimental Techniques in High-energy Nuclear and Particle Physics Springer Science & Business Media

This book summarizes the science to be carried out by the upcoming

Cherenkov Telescope Array, a major ground-based gamma-ray observatory that will be constructed over the next six to eight years. The major scientific themes, as well as core program of key science projects, have been developed by the CTA Consortium, a collaboration of scientists from many institutions worldwide.CTA will be the major facility in high-energy and very high-energy photon astronomy over the next decade and beyond. CTA will have capabilities well beyond past and present observatories. Thus, CTA's science program is expected to be rich and broad and will complement other major multiwavelength and multimessenger facilities. This book is intended to be the primary resource for the science case for CTA and it thus will be of great interest to the broader physics and astronomy communities. The electronic version (e-book) is available in open access.

Nuclear Structure Physics Cambridge University Press

This anthology contains fourteen intriguing stories by active research scientists and other writers trained in science. Science is at the heart of real science fiction, which is more than just westerns with ray guns or fantasy with spaceships. The people who do science and love science best are scientists. Scientists like Isaac Asimov, Arthur C. Clarke, and Fred Hoyle wrote some of the legendary tales of golden age science fiction. Today there is a new generation of scientists writing science fiction informed with the expertise of their fields, from astrophysics to computer science, biochemistry to rocket science, quantum physics to genetics, speculating about what is possible in our universe. Here lies the sense of wonder only science can deliver. All the stories in this volume are supplemented by afterwords commenting on the science underlying each story.

INIS Atomindex Springer Science & Business Media

This is the first of a two-volume presentation on current research problems in quantum optics, and will serve as a standard reference in the field for many years to come. The book provides an introduction to the methods of quantum statistical mechanics used in quantum optics and their application to the quantum theories of the single-mode laser and optical bistability. The generalized representations of Drummond and Gardiner are discussed together with the more standard methods for deriving Fokker-Planck equations.

Master Equations and Fokker-Planck Equations World Scientific

Microwave Devices, Circuits and Subsystems for Communications Engineering provides a detailed treatment of the common microwave elements found in modern microwave communications systems. The treatment is thorough without being unnecessarily mathematical. The emphasis is on acquiring a conceptual understanding of the techniques and technologies discussed and the practical design criteria required to apply these in real engineering situations. Key topics addressed include: Microwave diode and transistor equivalent circuits Microwave transmission line technologies and microstrip design Network methods and s-parameter measurements Smith chart and related design techniques Broadband and low-noise amplifier design Mixer theory and design Microwave filter design Oscillators, synthesisers and phase locked loops Each chapter is written by specialists in their field and the whole is edited by experience authors whose expertise spans

the fields of communications systems engineering and microwave circuit design. Microwave Devices, Circuits and Subsystems for Communications Engineering is suitable for senior electrical, electronic or telecommunications engineering undergraduate students, first year postgraduate students and experienced engineers seeking a conversion or refresher text. Includes a companion website featuring: Solutions to selected problems Electronic versions of the figures Sample chapter

Space Astronomy National Academies Press

This open access book gives a complete and comprehensive introduction to the fields of medical imaging systems, as designed for a broad range of applications. The authors of the book first explain the foundations of system theory and image processing, before highlighting several modalities in a dedicated chapter. The initial focus is on modalities that are closely related to traditional camera systems such as endoscopy and microscopy. This is followed by more complex image formation processes: magnetic resonance imaging, X-ray projection imaging, computed tomography, X-ray phase-contrast imaging, nuclear imaging, ultrasound, and optical coherence tomography.

Quantum Gravity Nuclear Structure Physics

This book highlights some of the latest advances in nanotechnology and nanomaterials from leading researchers in Ukraine, Europe, and beyond. It features contributions from participants in the 6th International Science and Practice Conference Nanotechnology and Nanomaterials (NANO2018) in Kiev, Ukraine on August 27-30, 2018 organized by the Institute of Physics of the National Academy of Sciences of Ukraine, University of Tartu (Estonia), University of Turin (Italy), and Pierre and Marie Curie University (France). Internationally recognized experts from a wide range of universities and research institutions share their knowledge and key results on nanooptics, energy storage and biomedical applications. This book's companion volume also addresses topics such as materials properties, behavior, and synthesis.

Department of Defense Dictionary of Military and Associated Terms Westview Press

Experimental Techniques in High-Energy Nuclear and Particle Physics is a compilation of outstanding technical papers and reviews of the ingenious methods developed for experimentation in modern nuclear and particle physics. This book, a second edition, provides a balanced view of the major tools and technical concepts currently in use, and elucidates the basic principles that underly the detection devices. Several of the articles in this volume have never been published, or have appeared in relatively inaccessible journals. Although the emphasis is on charged-particle tracking and calorimetry, general reviews of ionization detectors and Monte Carlo techniques are also included.This book serves as a compact source of reference for graduate students and experimenters in the fields of nuclear and particle physics, seeking information on some of the major ideas and techniques developed for modern experiments in these fields.

Serials in the British Library World Scientific

A unique graduate textbook that develops powerful approximation methods and their applications to real-life astrophysical systems.

An Anthology of Short Stories Springer Nature

NASA's Science Mission Directorate (SMD)

currently operates over five dozen missions, with approximately two dozen additional missions in development. These missions span the scientific fields associated with SMD's four divisionsâ€"Astrophysics, Earth Science, Heliophysics, and Planetary Sciences. Because a single mission can consist of multiple spacecraft, NASA-SMD is responsible for nearly 100 operational spacecraft. The most high profile of these are the large strategic missions, often referred to as "flagships." Large strategic missions are essential to maintaining the global leadership of the United States in space exploration and in science because only the United States has the budget, technology, and trained personnel in multiple scientific fields to conduct missions that attract a range of international partners. This report examines the role of large, strategic missions within a balanced program across NASA-SMD space and Earth sciences programs. It considers the role and scientific productivity of such missions in advancing science, technology and the long-term health of the field, and provides guidance that NASA can use to help set the priority of larger missions within a properly balanced program containing a range of mission classes.

Selected Proceedings of the 6th International Conference Nanotechnology and Nanomaterials (NANO2018), August 27-30, 2018, Kyiv, Ukraine MDPI

This volume places emphasis on the intricate interplay between creatine and creatine kinase function on one hand and proper brain function, neurodegenerative disease and/or neuroprotection on the other. The book, compiled by outstanding experts, provides a key reference summarizing the state-of-the-art in creatine and creatine kinase research. It is a must-read for understanding the links between creatine metabolism and neuroprotection as well as neurodegenerative disease.

Defending Planet Earth Springer Science & Business Media

This book is a compendium of research efforts and findings on the sources, occurrences, hydrochemistry, and several operating variables that influence the presence of oxyanions in aqua system. The content of this book has been designed to provide an insightful account of an array of innovative technologies for the management of the impacts of oxyanions in water, the progress and drawbacks of these technologies and those that have been effectively deployed to transform oxyanions in water to beneficial species. This book further x-rays global laws and economic policies targeted at effectively curtailing the presence of harmful oxyanions in water, challenges facing these policies, and future perspectives on how best to reduce the level of these harmful oxyanions in water to safe limit. The book is relevant to water professionals, policy makers, academics, and research students.

NASA's Large Strategic Science Missions John Wiley & Sons

Now in its fourth edition, Pulsar Astronomy provides a thoroughly revised and updated introduction to the field of pulsar astronomy.

An Introduction to the Physical Concepts Springer

This book emphasises both experimental and theoretical aspects of surface, interface and thin film physics. Compa- red to the earlier editions, which bore the title "Surfaces and Interfaces of Solid Materials", the book now places more emphasis on thin films, including also their superconducting and ferromagnetic properties. The present 4th edition thus presents techniques of preparing well-defined solid surfaces and interfaces, fundamental aspects of adsorption and layer growth, as well as basic models for the descripti- on of structural, vibronic and electronic properties of sur- faces, interfaces and thin films. Because of their importan- ce for modern information technology, significant attention is paid to the electronic properties of semiconductor inter- faces and heterostructures. Collective phenomena , such as

superconductivity and ferromagnetism, also feature promi- nently. Experimental sections covering essential measurement and preparation techniques are presented in separate panels.

Statistical Methods in Quantum Optics 1 Springer Science & Business Media

This open access book provides a broad context for the understanding of current problems of science and of the different movements aiming to improve the societal impact of science and research. The author offers insights with regard to ideas, old and new, about science, and their historical origins in philosophy and sociology of science, which is of interest to a broad readership. The book shows that scientifically grounded knowledge is required and helpful in understanding intellectual and political positions in various discussions on the grand challenges of our time and how science makes impact on society. The book reveals why interventions that look good or even obvious, are often met with resistance and are hard to realize in practice. Based on a thorough analysis, as well as personal experiences in aids research, university administration and as a science observer, the author provides - while being totally open regarding science's limitations- a realistic narrative about how research is conducted, and how reliable 'objective' knowledge is produced. His idea of science, which draws heavily on American pragmatism, fits in with the global Open Science movement. It is argued that Open Science is a truly and historically unique movement in that it translates the analysis of the problems of science into major institutional actions of system change in order to improve academic culture and the impact of science, engaging all actors in the field of science and academia.

Edexcel AS Physics Student Unit Guide: Unit 2 Physics at Work BoD – Books on Demand

Quantum gravity is perhaps the most important open problem in fundamental physics. It is the problem of merging quantum mechanics and general relativity, the two great conceptual revolutions in the physics of the twentieth century. The loop and spinfoam approach, presented in this 2004 book, is one of the leading research programs in the field. The first part of the book discusses the reformulation of the basis of classical and quantum Hamiltonian physics required by general relativity. The second part covers the basic technical research directions. Appendices include a detailed history of the subject of quantum gravity, hard-to-find mathematical material, and a discussion of some philosophical issues raised by the subject. This fascinating text is ideal for graduate students entering the field, as well as researchers already working in quantum gravity. It will also appeal to philosophers and other scholars interested in the nature of space and time.