

2013 May June Physics Papers

How math helps us solve the universe's deepest mysteries One of the great insights of science is that the universe has an underlying order. The supreme goal of physicists is to understand this order through laws that describe the behavior of the most basic particles and the forces between them. For centuries, we have searched for these laws by studying the results of experiments. Since the 1970s, however, experiments at the world's most powerful atom-smashers have offered few new clues. So some of the world's leading physicists have looked to a different source of insight: modern mathematics. These physicists are sometimes accused of doing 'fairy-tale physics', unrelated to the real world. But in *The Universe Speaks in Numbers*, award-winning science writer and biographer Farmelo argues that the physics they are doing is based squarely on the well-established principles of quantum theory and relativity, and part of a tradition dating back to Isaac Newton. With unprecedented access to some of the world's greatest scientific minds, Farmelo offers a vivid, behind-the-scenes account of the blossoming relationship between mathematics and physics and the research that could revolutionize our understanding of reality. A masterful account of some of the most groundbreaking ideas in physics in the past four decades. *The Universe Speaks in Numbers* is essential reading for anyone interested in the quest to discover the fundamental laws of nature.

This book examines current trends in higher education and the Scholarship of Teaching and Learning. It introduces readers to pedagogical strategies that instructors worldwide are using to overcome some of the challenges they face in higher education. To maximize their students' learning, this work argues that institutions are compelled to innovate their policies and instructors must be collaborative and creative in their practices in response to students' growing demands, needs, challenges to their learning, and the shifting terrain of a rapidly globalizing world. The text explores the idiosyncrasies and challenges that drive innovation across particular cultures, disciplines and institutions. It suggests that the responses to these drivers offer some universal and compatible lessons that not only optimize teaching and learning, but also transgress institutional, cultural, and disciplinary boundaries in higher education. The contributors to this collection work in the United States, the United Kingdom, Africa, Asia, Australia, Scandinavia and the Middle East. They represent a broad range of disciplines, fields and institutional types. They teach in varied contexts, durations, delivery modes, and formats, including online, study abroad, blended, accelerated, condensed, intensive and mortar-and-brick settings. Their higher education students are equally as diverse, in age, cultural backgrounds and needs, but willingly lend their voices and experiences to their instructors' study of teaching and learning in their particular contexts. This book harnesses the rich diversities and range our contributors represent and shares the results of their expertise, research, and assessments of some of the most creative and effective ways to improve student learning in the face of stagnant practices, limited resources, and other deficiencies that instructors and students face in higher education.

Five science grad students commandeer a top-secret time machine. They send one of their own, John, back to New York City, 1928. There he drops hints to Columbia University science grad students about future scientific developments in the hope of speeding up scientific advances in the future. John makes friends with two men who frequent the Savoy and wins the heart of a beautiful woman who works there. The three men go into business together and overcome extortion attempts by mobsters and bigotry on the part of business rivals. One of John's friends in the present-time travels to Chicago ten years into the future and another goes to ancient Egypt.

Surveys key advances in commercial satellite communications and what might be the implications and/or opportunities for end-users and service providers in utilizing the latest fast-evolving innovations in this field This book explores the evolving technical options and opportunities of satellite networks. Designed to be a self-contained reference, the book includes background technical material in an introductory chapter that will serve as a primer to satellite communications. The text discusses advances in modulation techniques, such as DBV-S2 extensions (DVS-S2X); spotbeam-based geosynchronous and medium earth orbit High Throughput Satellite (HTS) technologies and Internet applications; enhanced mobility services with aeronautical and maritime applications; Machine to Machine (M2M) satellite applications; emerging ultra HD technologies; and electric propulsion. The author surveys the latest innovations and service strategies and the resulting implications, which involves: Discussing advances in modulation techniques and HTS spotbeam technologies Surveying emerging high speed aeronautical mobility services and maritime and other terrestrial mobility services Assessing M2M (machine-to-machine) applications, emerging Ultra HD video technologies and new space technology Satellite communication is an integral part of the larger fields of commercial, television/media, government, and military communications, because of its multicast/broadcast capabilities, mobility, reliability, and global reach. High Throughput Satellites) are expected to revolutionize the field during this decade, providing very high speed, yet cost-effective, Internet access and connectivity anywhere in the world, in rural areas, in the air, and at sea. M2M connectivity, enabled by satellite communications, connects trucks on transcontinental trips, aircraft in real-time-telemetry aggregation, and mercantile ships. A comprehensive analysis of the new advances in satellite communications, *Innovations in Satellite Communications Technology* is a reference for telecommunications and satellite providers and end-users, technology investors, logistic professionals, and more.

Cancer, Radiation Therapy, and the Market

Time Travelers

Handbook of Research on Pedagogical Innovations for Sustainable Development

Advanced Methodologies and Technologies in Media and Communications

Emerging Technologies for STEAM Education

Batteryless mm-Wave Wireless Sensors

Understanding the chemistry underlying sustainable energy is central to any long-term solution to meeting our future energy needs. Chemistry of Sustainable Energy presents chemistry through the lens of several sustainable energy options, demonstrating the breadth and depth of research being carried out to address issues of sustainability and the gl

The IceCube Observatory has been called the "weirdest" of the seven wonders of modern astronomy by Scientific American. In *The Telescope in the Ice*, Mark Bowen tells the amazing story of the people who built the instrument and the science involved. Located near the U. S. Amundsen-Scott Research Station at the geographic South Pole, IceCube is unlike most telescopes in that it is not designed to detect light. It employs a cubic kilometer of diamond-clear ice, more than a mile beneath the surface, to detect an elementary particle known as the neutrino. In 2010, it detected the first extraterrestrial high-energy neutrinos and thus gave birth to a new field of astronomy. IceCube is also the largest particle physics detector ever built. Its scientific goals span not only astrophysics and cosmology but also pure particle physics. And since the neutrino is one of the strangest and least understood of the known elementary particles, this is fertile ground. Neutrino physics is perhaps the most active field in particle physics today, and IceCube is at the forefront. *The Telescope in the Ice* is, ultimately, a book about people and the thrill of the chase: the struggle to understand the neutrino

and the pioneers and inventors of neutrino astronomy. It is a success story. BES, the Beijing Spectrometer, began its first groundbreaking physics run, thirty years ago, in 1989. This is the first high energy physics experiment in China, and has been unique throughout the world for its thorough and extended coverage of the tau and charm energy region. Since then, the BES detector has undergone steady improvements, upgrading to BESII in 1998 and to BESIII in 2008. Over the same period, the collaboration has expanded from 150 members, across 10 institutions in China and the United States, to about 500 members, across 72 institutions and 15 countries. The physics program, too, has extended from light hadron spectroscopy, tau, and charm physics to the discovery of exotic charmonium-like states, precision tests of the Standard Model of particle physics, and searches for new physics beyond the Standard Model. This special volume collects the proceedings of the symposium held at the Institute of High Energy Physics, Beijing, in celebration of the 30-year span of achievements and progress at the BES, BESII, and BESIII experiments. Written by many leaders of the BES collaborations, these proceedings document the early days of the BES experiments, important milestones, and the future physics program at BESIII.

Offers a comprehensive overview of NAND flash memories, with insights into NAND history, technology, challenges, evolutions, and perspectives Describes new program disturb issues, data retention, power consumption, and possible solutions for the challenges of 3D NAND flash memory Written by an authority in NAND flash memory technology, with over 25 years' experience

A Handbook for the 21st Century

Routledge Handbook of Drugs and Sport

Complete Scattering Parameters of Polydispersed Hydrometeors in the $[\lambda] 0.1$ to $[\lambda] 10$ Cm Range

How Modern Math Reveals Nature's Deepest Secrets

Conflict and Cooperation in Sino-US Relations

Engineering Ideas into Reality

Numerous crosswinds are buffeting the more than 40-year-old People's Republic of China--American relationship, yet only once since Nixon's historic trip to China in 1972 has a major conflagration seemed a real possibility. Anchoring the relationship throughout multiple storms are the two countries' broad areas of collaboration such as deep links in culture, economics, and education. However, for some observers, the conflictual aspects of the relationship seem to be gaining prominence. Conflict and Cooperation in Sino-US Relations offers a timely and current look at one of the world's weightiest bilateral relationships. It goes beyond detailing the conflict and cooperation that have been integral facets of China--US interactions since 1972, to gauging the relationship's evolution and future trends, examining its nuances regarding diverse issues such as the Asia-Pacific leadership structure, the South China Sea, and the Korean peninsula. The book further delves into the causes of conflict and cooperation, offers diverse solutions for tempering frictions between Beijing and Washington, and considers the efficacy of some of the mechanisms (e.g., military-to-military exchanges) that China and the US currently employ to manage their relationship. The chapters suggest that extreme anxieties about China--US relations may be misplaced, but that there nonetheless are some worrisome signs even in areas like economics and the environment that are perceived as naturally cooperative. While the book does not offer any silver bullets, various contributors contend that successful management of Sino-American relations may require greater American accommodation of China's interests. This book will be of great interest to students and scholars of Chinese politics, American politics, international relations, and Asian studies, as well as to policy-makers working in the field.

The International J. Mathematical Combinatorics is a fully refereed international journal, sponsored by the MADIS of Chinese Academy of Sciences and published in USA quarterly, which publishes original research papers and survey articles in all aspects of mathematical combinatorics, Smarandache multi-spaces, Smarandache geometries, non-Euclidean geometry, topology and their applications to other sciences.

Summary: "This book brings together case study examples in the fields of sustainability, sustainable development, and education for sustainable development"--

At once a celebration of technology and a warning about its misuse, The Glass Cage will change the way you think about the tools you use every day. In The Glass Cage, best-selling author Nicholas Carr digs behind the headlines about factory robots and self-driving cars, wearable computers and digitized medicine, as he explores the hidden costs of granting software dominion over our work and our leisure. Even as they bring ease to our lives, these programs are stealing something essential from us. Drawing on psychological and neurological studies that underscore how tightly people's happiness and satisfaction are tied to performing hard work in the real world, Carr reveals something we already suspect: shifting our attention to computer screens can leave us disengaged and discontented. From nineteenth-century textile mills to the cockpits of modern jets, from the frozen hunting grounds of Inuit tribes to the sterile landscapes of GPS maps, The Glass Cage explores the impact of automation from a deeply human perspective, examining the personal as well as the economic consequences of our growing dependence on computers. With a characteristic blend of history and philosophy, poetry and science, Carr takes us on a journey from the work and early theory of Adam Smith and Alfred North Whitehead to the latest research into human attention, memory, and happiness, culminating in a moving meditation on how we can use technology to expand the human experience.

Inventing a New Astronomy at the South Pole

Fundamentals of Gas Shale Reservoirs

Making a World of Difference

A History of Columbia's School of Engineering and Applied Science Since 1864

The Equations of Materials

State Authority, New Risks and Dynamics

Winner—Parapsychological Association Book Award "A high-level book...sufficiently detailed to permit readers

with or without previous knowledge of parapsychology to evaluate the conclusions drawn by the authors. An excellent, comprehensive scholarly-level source of information about a long-contested area of research in psychology and related disciplines."--PsycCritiques "Indispensable.--Magonia "The evidence is impressive...substantial."--The Los Angeles Review of Books "An excellent summary of the latest advances in parapsychological research that updates developments in the decades of the nineties and the last fifteen years of this century...the work has been awarded the First Prize for the best book of parapsychology."--Instituto de Psicología Paranormal Many people have experienced such unusual phenomena as dreams that later seem to correspond with unforeseeable events, thinking of a long-lost friend just before he or she unexpectedly calls, or the ability to "feel" the presence of deceased loved ones. What many do not realize is that these types of experiences have been researched for more than a century by eminent scientists, including Nobel laureates. Most of these researchers have concluded that some of these phenomena do occur, although we are far from explaining them to everyone's satisfaction. This book is the first in almost 40 years to provide a comprehensive scientific overview of research in the field of parapsychology, explaining what we know and don't know about so-called psi phenomena, such as "telepathy," "precognition" or "psychokinesis." Contributors evaluate the evidence for these phenomena, accounting for factors such as selective memory, wish fulfillment and incorrect methods or analyses, in some cases offering psychological, physical and biological theories.

This volume highlights key challenges for fluid-flow prediction in carbonate reservoirs, the approaches currently employed to address these challenges and developments in fundamental science and technology. The papers span methods and case studies that highlight workflows and emerging technologies in the fields of geology, geophysics, petrophysics, reservoir modelling and computer science. Topics include: detailed pore-scale studies that explore fundamental processes and applications of imaging and flow modelling at the pore scale; case studies of diagenetic processes with complementary perspectives from reactive transport modelling; novel methods for rock typing; petrophysical studies that investigate the impact of diagenesis and fault-rock properties on acoustic signatures; mechanical modelling and seismic imaging of faults in carbonate rocks; modelling geological influences on seismic anisotropy; novel approaches to geological modelling; methods to represent key geological details in reservoir simulations and advances in computer visualization, analytics and interactions for geoscience and engineering.

Appraising cancer as a major medical market in the 2010s, Wall Street investors placed their bets on single-technology treatment facilities costing \$100-\$300 million each. Critics inside medicine called the widely-publicized proton-center boom "crazy medicine and unsustainable public policy." There was no valid evidence, they claimed, that proton beams were more effective than less costly alternatives. But developers expected insurance to cover their centers' staggeringly high costs and debts. Was speculation like this new to health care? Cancer, Radiation Therapy, and the Market shows how the radiation therapy specialty in the United States (later called radiation oncology) coevolved with its device industry throughout the twentieth-century. Academic engineers and physicians acquired financing to develop increasingly powerful radiation devices, initiated companies to manufacture the devices competitively, and designed hospital and freestanding procedure units to utilize them. In the process, they incorporated market strategies into medical organization and practice. Although palliative benefits and striking tumor reductions fueled hopes of curing cancer, scientific research all too often found serious patient harm and disappointing beneficial impact on cancer survival. This thoroughly documented and provocative inquiry concludes that public health policy needs to re-evaluate market-driven high-tech medicine and build evidence-based health care systems.

The job interview is probably the most important step you will take in your job search journey. Because it's always important to be prepared to respond effectively to the questions that employers typically ask at a job interview Petrogav International has prepared this eBooks that will help you to get a job in oil and gas industry. Since these questions are so common, hiring managers will expect you to be able to answer them smoothly and without hesitation. This eBook contains 200 questions and answers for job interview and as a BONUS web addresses to 309 video movies for a better understanding of the technological process. This course covers aspects like HSE, Process, Mechanical, Electrical and Instrumentation & Control that will enable you to apply for any position in the Oil and Gas Industry.

*How High-Stakes Financial Innovation is Reshaping Our World?For the Better
Processing, Materials, and Applications
On the Horizon*

*At the Intersection of Popular Music and Automotive Culture
Transgressing Boundaries*

NAND Flash Memory Technologies

More than ten years on from the most intense phase of the global financial crisis, and the collective international response in the G20 summit in London, a "new normal" has emerged with systems in place to mitigate against further banking crises. This updated new edition analyzes this post-crisis international and national regulatory framework and asks whether the current paradigm is fit for purpose as new dangers gestate and develop. This new edition includes a discussion of the impact of the aggressively deregulatory and anti-globalist policies of the Trump administration and its pursuit of an "America first" policy and explores its implications for the regulatory landscape constructed and tended by previous leaders. The author addresses new and future systemic risks, many outside the regulated banking sector, which have grown in importance since 2015. He develops possible future scenarios for the international regulatory architecture, both negative and positive, asking "Are we better prepared for future banking crises?" New risks, including the COVID-19 pandemic and economic crash, are testing the global system; and the G20, without US leadership, may be failing in this latest most severe crisis of our lifetimes. This book provides a unique narrative explanation drawn from leading actors of key events and policy changes as they unfolded immediately post-crisis. The author builds upon the first edition to capture key developments that have occurred during the past five years, while raising key questions and vulnerabilities, and looking at future

risks and challenges that may emerge. This text will be of great interest to students, teachers and researchers of financial frameworks, globalisation and political economy.

Driving Identities examines long-standing connections between popular music and the automotive industry and how this relationship has helped to construct and reflect various socio-cultural identities. It also challenges common assumptions regarding the divergences between industry and art, and reveals how music and sound are used to suture the putative divide between human and non-human.

This book is a ground-breaking inquiry into the relationship between popular music and automobiles, and into the mutual aesthetic and stylistic influences that have historically left their mark on both industries. Shaped by new historicism and cultural criticism, and by methodologies adapted from gender, LGBTQ+, and African-American studies, it makes an important contribution to understanding the complex and interconnected nature of identity and cultural formation. In its interdisciplinary approach, melding aspects of ethnomusicology, sociology, sound studies, and business studies, it pushes musicological scholarship into a new consideration and awareness of the complexity of identity construction and of influences that inform our musical culture. The volume also provides analyses of the confluences and coactions of popular music and automotive products to highlight the mutual influences on their respective aesthetic and technical evolutions. Driving Identities is aimed at both academics and enthusiasts of automotive culture, popular music, and cultural studies in general. It is accompanied by an extensive online database appendix of car-themed pop recordings and sheet music, searchable by year, artist, and title.

This book starts with background concerning three-dimensional integration - including their low energy consumption and high speed image processing - and then proceeds to how to construct them and which materials to use in particular situations. The book covers numerous applications, including next generation smart phones, driving assistance systems, capsule endoscopes, homing missiles, and many others. The book concludes with recent progress and developments in three dimensional packaging, as well as future prospects.

Lists citations with abstracts for aerospace related reports obtained from world wide sources and announces documents that have recently been entered into the NASA Scientific and Technical Information Database.

A Collection of Papers from the Next Generation

Change and Continuity, Causes and Cures

Mathematics without Apologies

Report to Congress of the U.S.-China Economic and Security Review Commission

The Historical Roots of Backwardness

Scientific and Technical Aerospace Reports

Guido Altarelli was a leading figure in 20th century particle physics. His scientific contributions and leadership played a key role in the development of the Standard Model of fundamental interactions, as well as the current search for new physics beyond it, both at and beyond CERN. This book is a collection of original contributions, at the cutting edge of scientific research, by some of the leading theoretical and experimental high-energy physicists currently in the field. These were inspired by Guido's ideas, whether directly or indirectly. This book is ideal for researchers looking to keep up with the latest developments in high-energy physics.

E-collaboration is a tool that breaks the boundaries of activities within and between organizations. E-collaboration technologies are making it easier than ever for people to work together no matter where they happen to be. Succeeding with collaboration at a level where it represents a competitive advantage requires a broad approach. Internal social networks can circumvent bureaucratic boundaries and facilitate information sharing activities among individuals across hierarchies and divisions or departments. This allows organizations to acquire resources or competencies from external sources that otherwise would be difficult or expensive to access. Accordingly, organizations focus more on their own areas of competence and gain a competitive advantage by acquiring richer content and better solutions in a creative and cost-effective way. Challenging times can provide new opportunities that need to be detected at the right time. There must be many other sources of competitive advantages which should support the main source of competitive value. Competitive advantage may be gained if the organization is able to find sources of competitive advantage in time of economic crises. Organizations have rapidly deployed technology solutions, such as collaboration tools and cloud computing, which enable their employees to work remotely and continue these organizational operations, especially during times of crisis. E-Collaboration Technologies and Strategies for Competitive Advantage Amid Challenging Times focuses on e-collaboration technologies, strategies, and solutions from a perspective of organizational competitive advantage, including e-collaboration technologies' situation and solutions, innovation systems, competition and strategies, marketing, and growth capabilities. The book presents a full understanding on e-collaboration technologies, strategies, and solutions in organizations, and provides insight for how to develop e-collaboration technologies, strategies, and solutions more generally so as to simultaneously leverage potential benefit and guard against potential risk, promoting organizational competitive advantage amid challenging times. This book is ideally intended for policymakers, government officials, corporate heads of firms, managers, managing directors, practitioners, researchers, academicians, and students seeking information on the e-collaboration technologies being employed in businesses in times of crisis.

The papers included in this volume comprise research from participants in the 2018 Nuclear Scholars Initiative and the Project on Nuclear Issues (PONI) Conference Series. PONI sponsors this research to provide a forum for facilitating new and innovative thinking and to provide a platform for emerging thought leaders across the nuclear enterprise.

In this comprehensive social history of Columbia University's School of Engineering and Applied Science (SEAS), Robert McCaughey combines archival research with oral testimony and contemporary interviews to build both a critical and celebratory portrait of one of the oldest engineering schools in the United States. McCaughey follows the evolving, occasionally rocky, and now integrated relationship between SEAS's engineers and the rest of the Columbia University student body, faculty, and administration. He also revisits the interaction between the SEAS staff and the inhabitants and institutions of the City of New York, where the

school has resided since its founding in 1864. He compares the historical struggles and achievements of the school's engineers with their present-day battles and accomplishments, and he contrasts their teaching and research approaches to those of their peers at other free-standing and Ivy league engineering schools. What begins as a localized history of a school striving to define itself within a university known for its strengths in the humanities and the social sciences becomes a wider story of the transformation of the applied sciences into a critical component of American technology and education.

Chemistry of Sustainable Energy

Portrait of a Problematic Vocation

Fundamental Controls on Fluid Flow in Carbonates

Full STEAM Ahead

The Telescope in the Ice

200 technical questions and answers for job interview Offshore Drilling Rigs

This new edition of Fundamentals of Plant Physiology continues to provide a comprehensive coverage on the basic principles of the subject with its focus on the concepts of plant physiological form, functions and its behaviour. While this new edition includes several contemporary topics to keep students abreast with the new ongoing research in the field, it also includes 11 new experiments to further strengthen the scientific outlook of the reader. Besides fulfilling the needs of undergraduate students, this book would also be useful for postgraduate students as well as aspirants of various competitive examinations.

Provides comprehensive information about the key exploration, development and optimization concepts required for gas shale reservoirs Includes statistics about gas shale resources and countries that have shale gas potential Addresses the challenges that oil and gas industries may confront for gas shale reservoir exploration and development Introduces petrophysical analysis, rock physics, geomechanics and passive seismic methods for gas shale plays Details shale gas environmental issues and challenges, economic consideration for gas shale reservoirs Includes case studies of major producing gas shale formations

This primer describes important equations of materials and the scientists who derived them. It provides an excellent introduction to the subject by making the material accessible and enjoyable. The book is dedicated to a number of propositions: 1. The most important equations are often simple and easily explained; 2. The most important equations are often experimental, confirmed time and again; 3. The most important equations have been derived by remarkable scientists who lived interesting lives. Each chapter covers a single equation and materials subject, and is structured in three sections: first, a description of the equation itself; second, a short biography of the scientist after whom it is named; and third, a discussion of some of the ramifications and applications of the equation. The biographical sections intertwine the personal and professional life of the scientist with contemporary political and scientific developments. Topics included are: Bravais lattices and crystals; Bragg's law and diffraction; the Gibbs phase rule and phases; Boltzmann's equation and thermodynamics; the Arrhenius equation and reactions; the Gibbs-Thomson equation and surfaces; Fick's laws and diffusion; the Scheil equation and solidification; the Avrami equation and phase transformations; Hooke's law and elasticity; the Burgers vector and plasticity; Griffith's equation and fracture; and the Fermi level and electrical properties. The book is written for students interested in the manufacture, structure, properties and engineering application of materials such as metals, polymers, ceramics, semiconductors and composites. It requires only a working knowledge of school maths, mainly algebra and simple calculus.

An insightful reflection on the mathematical soul What do pure mathematicians do, and why do they do it? Looking beyond the conventional answers—for the sake of truth, beauty, and practical applications—this book offers an eclectic panorama of the lives and values and hopes and fears of mathematicians in the twenty-first century, assembling material from a startlingly diverse assortment of scholarly, journalistic, and pop culture sources. Drawing on his personal experiences and obsessions as well as the thoughts and opinions of mathematicians from Archimedes and Omar Khayyám to such contemporary giants as Alexander Grothendieck and Robert Langlands, Michael Harris reveals the charisma and romance of mathematics as well as its darker side. In this portrait of mathematics as a community united around a set of common intellectual, ethical, and existential challenges, he touches on a wide variety of questions, such as: Are mathematicians to blame for the 2008 financial crisis? How can we talk about the ideas we were born too soon to understand? And how should you react if you are asked to explain number theory at a dinner party? Disarmingly candid, relentlessly intelligent, and richly entertaining, Mathematics without Apologies takes readers on an unapologetic guided tour of the mathematical life, from the philosophy and sociology of mathematics to its reflections in film and popular music, with detours through the mathematical and mystical traditions of Russia, India, medieval Islam, the Bronx, and beyond.

Three-Dimensional Integration of Semiconductors

Current Workflows to Emerging Technologies

The Redesign of the Global Financial Architecture

The Glass Cage: How Our Computers Are Changing Us

Integrity and Safety Handbook

Innovations in Satellite Communications and Satellite Technology

A comprehensive and detailed reference guide on the integrity and safety of oil and gas pipelines, both onshore and offshore. Covers a wide variety of topics, including design, pipe manufacture, pipeline welding, human factors, residual stresses, mechanical damage, fracture and corrosion, protection, inspection and monitoring, pipeline cleaning, direct assessment, repair, risk management, and abandonment. Links modern and vintage practices to help integrity engineers better understand their system and apply up-to-date technology to older infrastructure. Includes case histories with examples of solutions to complex problems related to pipeline integrity. Includes chapters on stress-based and strain-based design, the latter being a novel type of design that has only recently been investigated by designer firms and regulators. Provides information to help those who are responsible to establish procedures for ensuring pipeline integrity and safety.

This theory-to-practice guide offers leading-edge ideas for wide-scale curriculum reform in sciences, technology, engineering, the arts, and mathematics--the STEAM subjects. Chapters emphasize the critical importance of current and emerging digital technologies in bringing STEM education up to speed and implementing changes to curricula at the classroom level. Of particular interest are the diverse ways of integrating the liberal arts into STEM course content in mutually reshaping humanities education and scientific education. This framework and its many instructive examples are geared to ensure that both educators and students can become innovative thinkers and effective problem-solvers in a knowledge-based society. Included in the coverage: Reconceptualizing a college science learning experience in the new digital era. Using mobile devices to support formal, informal, and semi-formal learning. Change of attitudes, self-concept, and team dynamics in engineering education. The language arts as foundational for science, technology, engineering, art, and mathematics. Can K-12 math teachers train students to make valid logical reasoning? Moving forward with STEAM education research. Emerging Technologies for STEAM Education equips educators, education researchers, administrators, and education policymakers with curricular and pedagogical strategies for making STEAM education the bedrock of accessible, relevant learning in keeping with today's digital advances.

The extinction, the albedo of single scattering, the differential scattering cross section, and the complete polarization properties, per unit volume of cloud and rain elements, irradiated by microwave radiation at various frequencies were determined. Continuous drops size distribution functions are introduced to represent real clouds and precipitation, and the absorption and scattering parameters are integrated with high accuracy. A Rayleigh approximation is found adequate for the cloud model, but the complete Mie expressions had to be used for precipitation-sized particles. Older estimates were corroborated, but some new features were brought out for the first time, such as the scattering intensity and polarization (including its ellipticity) as a function of scattering angle. (Author).

The world has become obsessed with the Western notions of progress, development, and globalization, the latter a form of human and economic homogenization. These processes, through the aegis of the United Nations, are comparatively monitored. Those nations deemed to be 'lagging behind' are then provided with foreign aid and developmental assistance. For nearly seventy years, India has sought its place in this global endeavour; yet, even today, abject poverty and backwardness can be observed in districts in almost every state; with the highest concentration of such districts found in the state of Bihar and a cultural enclave, known as Mithila. Development in India has been elusive because it is difficult to define; and because the Western concepts of development and progress have no absolute equivalents within many non-Western settings. As a consequence, development programmes often fail because they are unable to ask the right questions, but equally important is the political economy derived from foreign aid. For politicians, there is no long-term benefit to be derived from successful development. In general, foreign aid only serves to corrupt governments and politicians and, in the end, does very little for those who need help. The struggling states of Bihar and Mithila serve as extreme examples of India's problems. Development here has been thwarted by a hereditary landed aristocracy supported by religion, casteism, custom, social stratification, tradition, and patterns of behaviour that can be traced back millennia. In turn, all these have been masterfully manipulated by co-opted politicians, who have turned politics into a veritable art form as this volume comprehensively demonstrates.

From My Vast Repertoire...: Guido Altarelli's Legacy

Oil and Gas Pipelines

The Universe Speaks in Numbers

The Industry Implications of DVB-S2X, High Throughput Satellites, Ultra HD, M2M, and IP

ICEL 2017 - Proceedings of the 12th International Conference on e-Learning

Parapsychology

This book describes the PREMIS system, which enables readers to overcome the limitations of state-of-the-art battery-less wireless sensors in size, cost, robustness and range, with a system concept for a 60 GHz wireless sensor system with monolithic sensors. The authors demonstrate a system in which the wireless sensors consist of wireless power receiving, sensing and communication functions in a single chip, without external components, avoiding costly IC-interfaces that are sensitive to mechanical and thermal stress.

Doping has become one of the most important and high-profile issues in contemporary sport. Shocking cases such as that of Lance Armstrong and the US Postal cycling team have exposed the complicated relationships between athletes, teams, physicians, sports governing bodies, drugs providers, and judicial systems, all locked in a constant struggle for competitive advantage. The Routledge Handbook of Drugs and Sport is simply the most comprehensive and authoritative survey of social scientific research on this

hugely important issue ever to be published. It presents an overview of key topics, problems, ideas, concepts and cases across seven thematic sections, which include chapters addressing: The history of doping in sport Philosophical approaches to understanding doping The development of anti-doping policy Studies of doping in seven major sports, including athletics, cycling, baseball and soccer In-depth analysis of four of the most prominent doping scandals in history, namely Ben Johnson, institutionalized doping in the former GDR, the 1998 Tour de France and Lance Armstrong WADA and the national anti-doping organizations Key contemporary debates around strict liability, the criminalization of doping, and zero tolerance versus harm reduction Doping outside of elite sport, in gyms, the military and the police. With contributions from many of the world's leading researchers into drugs and sport, this book is the perfect starting point for any advanced student, researcher, policy maker, coach or administrator looking to develop their understanding of an issue that has had, and will continue to have, a profound impact on the development of sport.

Six years after the financial crisis, investment bankers remain villains in the public mind. But as Economist editor Andrew Palmer reveals in Smart Money, this vilified industry is capable of doing great good for society. In this sweeping account of the history, present, and future of financial innovation, Palmer argues that we need bankers today more than ever before. From social-impact bonds that fund safety net programs for the homeless to human-capital contracts that send lower-class youth to college, and from start-ups that invest in cancer research to financial products that encourage people to save more money for retirement, bankers are building better lives for people across the world—and across the income spectrum. While acknowledging the role of complex financial products in causing the Great Recession, Palmer convincingly argues that the financial sector is the nevertheless the source of surprisingly effective solutions to the most intractable problems of the twenty-first century.

Fifty years ago, the National Academy of Engineering (NAE) was founded by the stroke of a pen when the National Academy of Sciences Council approved the NAE's articles of organization. Making a World of Difference commemorates the NAE anniversary with a collection of essays that highlight the prodigious changes in people's lives that have been created by engineering over the past half century and consider how the future will be similarly shaped. Over the past 50 years, engineering has transformed our lives literally every day, and it will continue to do so going forward, utilizing new capabilities, creating new applications, and providing ever-expanding services to people. The essays of Making a World of Difference discuss the seamless integration of engineering into both our society and our daily lives, and present a vision of what engineering may deliver in the next half century.

Progress in Physics

Driving Identities

E-Collaboration Technologies and Strategies for Competitive Advantage Amid Challenging Times

A Lever Long Enough

Smart Money

Bihar and Mithila

Media and communication advancements allow individuals across the globe to connect in the blink of an eye. Individuals can share information and collaborate on new projects like never before while also remaining informed on global issues through ever-improving media outlets and technologies. Advanced Methodologies and Technologies in Media and Communications provides emerging research on the modern effects of media on cultures, individuals, and groups. While highlighting a range of topics such as social media use and marketing, media influence, and communication technology, this book explores how these advancements shape and further the global society. This book is an important resource for media researchers and professionals, academics, students, and communications experts seeking new information on the effective use of modern technology in communication applications.

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