

# 2014 Physical Sciences March Common Paper

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[Learned Lives in England, 1900-1950](#) William C. Lubenow 2020 If objectivity was the great discovery of the nineteenth century, uncertainty was the great discovery of the twentieth century.

[The Comprehensive Guide to Science and Faith](#) William A. Dembski 2021-10-05 Science and Faith Can—and Do—Support Each Other Science and Christianity are often presented as opposites, when in fact the order of the universe and the complexity of life powerfully testify to intelligent design. With this comprehensive resource that includes the latest research, you'll witness how the findings of scientists provide compelling reasons to acknowledge the mind and presence of a creator. Featuring more than 45 entries by top-caliber experts, you'll better understand... how scientific concepts like intelligent design are supported by evidence the scientific findings that support the history and accounts found in the Bible the biases that lead to scientific information being presented as a challenge—rather than a complement—to Christianity Whether you're looking for answers to your own questions or seeking to explain the case for intelligent design to others, The Comprehensive Guide to Science and Faith is an invaluable apologetic tool that will help you explore and analyze the relevant facts, research, and theories in light of biblical truth. **ICSE Physics Book I For Class-IX** Pankaj Bhatt The basic principles are explained with examples from student's daily life situations and every topic is followed by thought-provoking questions. Relevant illustrations have been given, wherever necessary. The language used is simple and lucid which keeps the interest of the students alive till the end of the topic.

[The Value of Everything](#) Mariana Mazzucato 2018-09-11 Modern economies reward activities that extract value rather than create it. This must change to ensure a capitalism that works for us all. Shortlisted for the FT & McKinsey Business Book of the Year Award A scathing indictment of our current global financial system, The Value of Everything rigorously scrutinizes the way in which economic value has been accounted and reveals how economic theory has failed to clearly delineate the difference between value creation and value extraction. Mariana Mazzucato argues that the increasingly blurry distinction between the two categories has allowed certain actors in the economy to portray themselves as value creators, while in reality they are just moving around existing value or, even worse, destroying it. The book uses case studies—from Silicon Valley to the financial sector to big pharma—to show how the foggy notions of value create confusion between rents and profits, reward extractors and creators, and distort the measurements of growth and GDP. In the process, innovation suffers and inequality rises. The lesson here is urgent and sobering: to rescue our economy from the next inevitable crisis and to foster long-term economic growth, we will need to rethink capitalism, rethink the role of public policy and the importance of the public sector, and redefine how we measure value in our society.

**Atlas of Knowledge** Katy Börner 2015-03-20 The power of mapping: principles for visualizing knowledge, illustrated by many stunning large-scale, full-color maps. Maps of physical spaces locate us in the world and help us navigate unfamiliar routes. Maps of topical spaces help us visualize the extent and structure of our collective knowledge; they reveal bursts of activity, pathways of ideas, and borders that beg to be crossed. This book, from the author of Atlas of Science, describes the power of topical maps, providing readers with principles for visualizing knowledge and offering as examples forty large-scale and more than 100 small-scale full-color maps. Today, data literacy is becoming as important as language literacy. Well-designed visualizations can rescue us from a sea of data, helping us to make sense of information, connect ideas, and make better decisions in real time. In Atlas of Knowledge, leading visualization expert Katy Börner makes the case for a systems science approach to science and technology studies and explains different types and levels of analysis. Drawing on fifteen years of teaching and tool development, she introduces a theoretical framework meant to guide readers through user and task analysis; data preparation, analysis, and visualization; visualization deployment; and the interpretation of science maps. To exemplify the framework, the Atlas features striking and enlightening new maps from the popular "Places & Spaces: Mapping Science" exhibit that range from "Key Events in the Development of the Video Tape Recorder" to "Mobile Landscapes: Location Data from Cell Phones for Urban Analysis" to "Literary Empires: Mapping Temporal and Spatial Settings of Victorian Poetry" to "Seeing Standards: A Visualization of the Metadata Universe." She also discusses the possible effect of science maps on the practice of science. *Chinese Journal of Physics (Peking)*. 1965

*An Introduction to Cyber Modeling and Simulation* Jerry M. Couretas 2018-09-19 Introduces readers to the field of cyber modeling and simulation and examines current developments in the US and internationally This book provides an overview of cyber modeling and simulation (M&S) developments. Using scenarios, courses of action (COAs), and current M&S and simulation environments, the author presents the overall information assurance process, incorporating the people, policies, processes, and technologies currently available in the field. The author ties up the various threads that currently compose cyber M&S into a coherent view of what is measurable, simulative, and usable in order to evaluate systems for assured operation. An Introduction to Cyber Modeling and Simulation provides the reader with examples of tools and technologies currently available for performing cyber modeling and simulation. It examines how decision-making processes may benefit from M&S in cyber defense. It also examines example emulators, simulators and their potential combination. The book also takes a look at corresponding verification and validation (V&V) processes, which provide the operational community with confidence in knowing that cyber models represent the real world. This book: Explores the role of cyber M&S in decision making Provides a method for contextualizing and understanding cyber risk Shows how concepts such the Risk Management Framework (RMF) leverage multiple processes and policies into a coherent whole Evaluates standards for pure IT operations, "cyber for cyber," and operational/mission cyber evaluations—"cyber for others" Develops a method for estimating both the vulnerability of the system (i.e., time to exploit) and provides an approach for mitigating risk via policy, training, and technology alternatives Uses a model-based approach An Introduction to Cyber Modeling and Simulation is a must read for all technical professionals and students wishing to expand their knowledge of cyber M&S for future professional work.

*Addressing Global Environmental Challenges from a Peace Ecology Perspective* Hans Günter Brauch 2016-10-08 Addressing global environmental challenges from a peace ecology perspective, the present book offers peer-reviewed texts that build on the expanding field of peace ecology and applies this concept to global environmental challenges in the Anthropocene. Hans Günter Brauch (Germany) offers a typology of time and turning points in the 20th century; Juliet Bennett (Australia) discusses the global ecological crisis resulting from a "tyranny of small decisions"; Katharina Bitzker (Canada) debates "the emotional dimensions of ecological peacebuilding" through love of nature; Henri Myrntinen (UK) analyses "preliminary findings on gender, peacebuilding and climate change in Honduras" while Úrsula Oswald Spring (Mexico) offers a critical review of the policy and scientific nexus debate on "the water, energy, food and biodiversity nexus", reflecting on security in Mexico. In closing, Brauch discusses whether strategies of sustainability transition may enhance the prospects for achieving sustainable peace in the Anthropocene. [UPPSC \(Uttar Pradesh Public Service Commission\) UP Combined State/Upper Subordinate Services General Studies \(Paper-I\) Preliminary Examination Solved Papers 2022-2005](#) Dr. Ranjit Kumar Singh, IAS (AIR-49) 2022-11-09 The presented book UPPSC (Uttar Pradesh Public Service Commission) General Studies (Paper-I) Preliminary Examination Solved Papers is a compilation of previous years' examination question papers from 2022 to 2005. Aspirants can find all these question papers easily where most of the syllabus is covered in the form of MCQs. The solutions are supplemented lucidly with analytical explanations to promote a clearer understanding to various levels of questions depending upon the complexity. This book seeks to make the aspirants fully aware about the developments in the papers throughout these years along with preparing them to face the upcoming examination with confidence.

**Investing in Science** Massimo Florio 2019-10-15 A proposal for using cost-benefit analysis to evaluate the socioeconomic impact of public investment in large scientific projects. Large particle accelerators, outer space probes, genomics platforms: all are scientific enterprises managed through the new form of the research infrastructure, in which communities of scientists collaborate across nations, universities, research institutions, and disciplines. Such large projects are often publicly funded, with no accepted way

to measure the benefits to society of these investments. In this book, Massimo Florio suggests the use of cost-benefit analysis (CBA) to evaluate the socioeconomic impact of public investment in large and costly scientific projects. The core concept of CBA of any infrastructure is to undertake the consistent intertemporal accounting of social welfare effects using the available information. Florio develops a simple framework for such accounting in the research infrastructure context and then offers a systematic analysis of the benefits in terms of the social agents involved. He measures the benefits to scientists, students, and postdoctoral researchers; the effect on firms of knowledge spillovers; the benefits to users of information technology and science-based innovation; the welfare effects on the general public of cultural services provided by RIs; and the willingness of taxpayers to fund scientific knowledge creation. Finally, Florio shows how these costs and benefits can be expressed in the form of stochastic net present value and other summary indicators.

[Applied Physics, System Science and Computers II](#) Klimis Ntalianis 2018-06-25 This book reports on advanced theories and methods in three related fields of research: applied physics, system science and computers. It is organized in three parts, the first of which covers applied physics topics, including lasers and accelerators; condensed matter, soft matter and materials science; nanoscience and quantum engineering; atomic, molecular, optical and plasma physics; as well as nuclear and high-energy particle physics. It also addresses astrophysics, gravitation, earth and environmental science, as well as medical and biological physics. The second and third parts focus on advances in computers and system science, respectively, and report on automatic circuit control, power systems, computer communication, fluid mechanics, simulation and modeling, software engineering, data structures and applications of artificial intelligence among other areas. Offering a collection of contributions presented at the 2nd International Conference on Applied Physics, System Science and Computers (APSAC), held in Dubrovnik, Croatia on September 27-29, 2017, the book bridges the gap between applied physics and electrical engineering. It not only to presents new methods, but also promotes collaborations between different communities working on related topics at the interface between physics and engineering, with a special focus on communication, data modeling and visualization, quantum information, applied mechanics as well as bio and geophysics. *Overcoming Barriers to Deployment of Plug-in Electric Vehicles* National Research Council 2015-06-26 In the past few years, interest in plug-in electric vehicles (PEVs) has grown. Advances in battery and other technologies, new federal standards for carbon-dioxide emissions and fuel economy, state zero-emission-vehicle requirements, and the current administration's goal of putting millions of alternative-fuel vehicles on the road have all highlighted PEVs as a transportation alternative. Consumers are also beginning to recognize the advantages of PEVs over conventional vehicles, such as lower operating costs, smoother operation, and better acceleration; the ability to fuel up at home; and zero tailpipe emissions when the vehicle operates solely on its battery. There are, however, barriers to PEV deployment, including the vehicle cost, the short all-electric driving range, the long battery charging time, uncertainties about battery life, the few choices of vehicle models, and the need for a charging infrastructure to support PEVs. What should industry do to improve the performance of PEVs and make them more attractive to consumers? At the request of Congress, Overcoming Barriers to Deployment of Plug-in Electric Vehicles identifies barriers to the introduction of electric vehicles and recommends ways to mitigate these barriers. This report examines the characteristics and capabilities of electric vehicle technologies, such as cost, performance, range, safety, and durability, and assesses how these factors might create barriers to widespread deployment. Overcoming Barriers to Deployment of Plug-in Electric Vehicles provides an overview of the current status of PEVs and makes recommendations to spur the industry and increase the attractiveness of this promising technology for consumers. Through consideration of consumer behaviors, tax incentives, business models, incentive programs, and infrastructure needs, this book studies the state of the industry and makes recommendations to further its development and acceptance.

**Research and Applications in Global Supercomputing** Segall, Richard S. 2015-01-31 Rapidly generating and processing large amounts of data, supercomputers are currently at the leading edge of computing technologies. Supercomputers are employed in many different fields, establishing them as an integral part of the computational sciences. Research and Applications in Global Supercomputing investigates current and emerging research in the field, as well as the application of this technology to a variety of areas. Highlighting a broad range of concepts, this publication is a comprehensive reference source for professionals, researchers, students, and practitioners interested in the various topics pertaining to supercomputing and how this technology can be applied to solve problems in a multitude of disciplines. [Doctoral Student Skills](#) Christopher L. Pallas 2022-09-06 Doctoral Student Skills offers a comprehensive overview of the key skills doctoral students need to succeed in their studies and prepare for academic and non-academic jobs. Revealing the often-hidden rules of graduate school success, it guides students through challenges like selecting a research topic, choosing an advisor, preparing for conferences, publishing their work, and entering the job market. The book begins by explaining how to survey the job market and identify "signifiers" that will signal to future employers the student's suitability for a job. It then guides students to reflect on their own experiences and abilities to identify their areas of comparative advantage. Providing detailed instructions on how to acquire key signifiers - including conference presentations, publications, grants, awards, and teaching experience - the volume prepares students for future professional success, while teaching them how to leverage these activities to enhance their progress in their present studies. The book is designed to be used as a course text or for self-study. Each chapter features reflective exercises that can be used individually or in small groups, along with recommended readings and additional resources to enhance student learning.

**Reducing Fuel Consumption and Greenhouse Gas Emissions of Medium- and Heavy-Duty Vehicles, Phase Two** National Academies of Sciences, Engineering, and Medicine 2020-06-15 Medium- and heavy-duty trucks, motor coaches, and transit buses - collectively, "medium- and heavy-duty vehicles", or MHDVs - are used in every sector of the economy. The fuel consumption and greenhouse gas emissions of MHDVs have become a focus of legislative and regulatory action in the past few years. This study is a follow-on to the National Research Council's 2010 report, Technologies and Approaches to Reducing the Fuel Consumption of Medium- and Heavy-Duty Vehicles. That report provided a series of findings and recommendations on the development of regulations for reducing fuel consumption of MHDVs. On September 15, 2011, NHTSA and EPA finalized joint Phase I rules to establish a comprehensive Heavy-Duty National Program to reduce greenhouse gas emissions and fuel consumption for on-road medium- and heavy-duty vehicles. As NHTSA and EPA began working on a second round of standards, the National Academies issued another report, Reducing the Fuel Consumption and Greenhouse Gas Emissions of Medium- and Heavy-Duty Vehicles, Phase Two: First Report, providing recommendations for the Phase II standards. This third and final report focuses on a possible third phase of regulations to be promulgated by these agencies in the next decade.

**General Studies & CSAT** YCT Expert Team 2023 UPPCS (Pre) General Studies & CSAT Solved Papers **Chinese Journal of Physics** 1965

**Strengthening Data Science Methods for Department of Defense Personnel and Readiness** **Missions** National Academies of Sciences, Engineering, and Medicine 2017-02-06 The Office of the Under Secretary of Defense (Personnel & Readiness), referred to throughout this report as P&R, is responsible for the total force management of all Department of Defense (DoD) components including the recruitment, readiness, and retention of personnel. Its work and policies are supported by a number of organizations both within DoD, including the Defense Manpower Data Center (DMDC), and externally, including the federally funded research and development centers (FFRDCs) that work for DoD. P&R must be able to answer questions for the Secretary of Defense such as how to recruit people with an aptitude for and interest in various specialties and along particular career tracks and how to assess on an ongoing basis service members' career satisfaction and their ability to meet new challenges. P&R must also address larger-scale questions, such as how the current realignment of forces to the Asia-Pacific area and other regions will affect recruitment, readiness, and retention. While DoD makes use of large-scale data and

mathematical analysis in intelligence, surveillance, reconnaissance, and elsewhere—exploiting techniques such as complex network analysis, machine learning, streaming social media analysis, and anomaly detection—these skills and capabilities have not been applied as well to the personnel and readiness enterprise. Strengthening Data Science Methods for Department of Defense Personnel and Readiness Missions offers and roadmap and implementation plan for the integration of data analysis in support of decisions within the purview of P&R.

**The Growing Gap in Life Expectancy by Income** National Academies of Sciences, Engineering, and Medicine 2015-09-17 The U.S. population is aging. Social Security projections suggest that between 2013 and 2050, the population aged 65 and over will almost double, from 45 million to 86 million. One key driver of population aging is ongoing increases in life expectancy. Average U.S. life expectancy was 67 years for males and 73 years for females five decades ago; the averages are now 76 and 81, respectively. It has long been the case that better-educated, higher-income people enjoy longer life expectancies than less-educated, lower-income people. The causes include early life conditions, behavioral factors (such as nutrition, exercise, and smoking behaviors), stress, and access to health care services, all of which can vary across education and income. Our major entitlement programs - Medicare, Medicaid, Social Security, and Supplemental Security Income - have come to deliver disproportionately larger lifetime benefits to higher-income people because, on average, they are increasingly collecting those benefits over more years than others. This report studies the impact the growing gap in life expectancy has on the present value of lifetime benefits that people with higher or lower earnings will receive from major entitlement programs. The analysis presented in *The Growing Gap in Life Expectancy by Income* goes beyond an examination of the existing literature by providing the first comprehensive estimates of how lifetime benefits are affected by the changing distribution of life expectancy. The report also explores, from a lifetime benefit perspective, how the growing gap in longevity affects traditional policy analyses of reforms to the nation's leading entitlement programs. This in-depth analysis of the economic impacts of the longevity gap will inform debate and assist decision makers, economists, and researchers.

**Handbook of the Politics of the Arctic** Leif Christian Jensen 2015-09-25 The Arctic has again become one of the leading issues on the international foreign policy agenda, in a manner unseen since the Cold War. Drawing on the perspectives of geo-politics and international law, this Handbook offers fresh insights and perspectives on the most pressing issues, grouped under the headings of political ascendancy, climate and environmental issues, resources and energy, and the response and policies of affected countries.

**Developing Property Sustainably** Sara J. Wilkinson 2015-06-05 *Developing Property Sustainably* introduces readers to the key issues surrounding sustainable property development in the global marketplace. Pulling together received wisdom and original research, the authors provide a clear and practical overview of the sustainable property development process as well as a critical appraisal of the problems faced by global built environment stakeholders. Throughout, the authors demonstrate how the property development industry could and should respond better to debate on sustainable practices in the built environment by adopting more rigorous measurement techniques and sustainable approaches. Starting by exploring key definitions and stakeholders, the book goes on to explore finance, planning, construction, procurement, occupation, retrofit and lifecycle sustainability in order to provide the reader with a detailed understanding of all the issues involved in the delivery of sustainable property development from inception to occupation and beyond. Throughout the book, international case studies are used to demonstrate how sustainable property development is applied in practice around the world. With a logical chapter structure and accessible writing style, *Developing Property Sustainably* would be perfect for use on undergraduate and postgraduate modules and courses in real estate development, property and urban development and other built environment programmes.

**The Connected Consumer** Dinesh Kumar 2015-10-06 Traditional marketing faces challenges as never before. The way that people interact with each other and with companies is changing completely in today's era of 24/7 connectivity. This book explores tectonic changes in buyer behavior and how businesses are responding to those changes. It describes how data is used to track and analyze customers in almost everything they do, and how marketing communications are delivered with precision to individual mobile devices. The connected customer is blurring the line between online and offline sales resulting in an entirely new purchase cycle.

**Let There Be Light!** Robert S. Dutch 2017-06-16 Have you ever wondered what it is like to work on a nuclear power plant? Robert Dutch worked in the UK's nuclear industry for many years as a scientist and then as a tutor at a nuclear training center. He also holds degrees in theology. Drawing upon his qualifications and experience Robert addresses the controversial issue of nuclear power from a Christian perspective. In contrast to a negative nuclear narrative often portrayed, he presents a positive nuclear narrative alongside other ways of generating electricity. Be prepared to be challenged to think seriously about nuclear's merits in providing clean, low-carbon electricity.

**Educating for the 21st Century** Suzanne Choo 2016-10-20 All over the world, governments, policymakers, and educators are advocating the need to educate students for the 21st first century. This book provides insights into what this means and the ways 21st century education is theorized and implemented in practice. The first part, "Perspectives: Mapping our futures-in-the-making," uncovers the contradictions, tensions and processes that shape 21st century education discourses. The second part, "Policies: Constructing the future through policymaking," discusses how 21st century education is translated into policies and the resulting tensions that emerge from top-down, state sanctioned policies and bottom-up initiatives. The third part, "Practices: Enacting the Future in Local Contexts," discusses on-the-ground initiatives that schools in various countries around the world enact to educate their students for the 21st century. This volume includes contributions from leading scholars in the field as well as educators from schools and those working with schools.

**Ethical Innovation in Business and the Economy** Georges Enderle 2015-12-18 Innovation has become a buzzword that promises dramatic changes in almost every field of business. Absent from this attention is a serious discussion of the ethical sides of dramatic change. To address this, editors Georges Enderle and Patrick E. Murphy gather a team of experts to fully examine the ethics of innovation within business and the economy in this standout addition to the *Studies in TransAtlantic Business Ethics* series.

*Karnataka PUE Solved Papers II PUC English, Physics, Chemistry & Mathematics (Set of 4 Books) (For 2023 Exam)* Oswaal Editorial Board 2022-09-01 Latest Solved Paper with Scheme of Valuation-2022.

Strictly as per the latest syllabus, blueprint & design of the question paper. All Typologies-Objective, VSA, SA & Essay Types Questions Previous Years' Exam(2011-2022) Questions with Scheme of Valuation NCERT Textbook Questions fully solved PUE Question Bank Fully solved Revision notes, Mind Maps & Concept videos for clarity of Concepts

*International Handbook on Responsible Innovation* René von Schomberg 2019 The Handbook constitutes a global resource for the fast growing interdisciplinary research and policy communities addressing the challenge of driving innovation towards socially desirable outcomes. This book brings together well-known authors from the US, Europe and Asia who develop conceptual and regional perspectives on responsible innovation as well as exploring the prospects for further implementation of responsible innovation in emerging technological practices ranging from agriculture and medicine, to nanotechnology and robotics. The emphasis is on the socio-economic and normative dimensions of innovation including issues of social risk and sustainability.

**Science Between Myth and History** José G. Perillán 2021 *Science Between Myth and History* explores scientific storytelling and its implications on the teaching, practice, and public perception of science. In communicating their science, scientists tend to use historical narratives for important rhetorical purposes. This text explores the implications of doing this.

**The Chemical News and Journal of Physical Science** 1869

**Future Spacecraft Propulsion Systems and Integration** Paul A. Czysz 2017-08-30 The updated and expanded third edition of this book focuses on the multi-disciplinary coupling between flight-vehicle hardware alternatives and enabling propulsion systems. It discusses how to match near-term and far-term aerospace vehicles to missions and provides a comprehensive overview of the subject, directly contributing to the next-generation space infrastructure, from space tourism to space exploration. This holistic treatment defines a mission portfolio addressing near-term to long-term space transportation needs covering sub-orbital, orbital and escape flight profiles. In this context, a vehicle configuration classification is introduced covering alternatives starting from the dawn of space access. A best-practice parametric sizing approach is introduced to correctly design the flight vehicle for the mission. This technique balances required mission with the available vehicle solution space and is an essential capability sought after by technology forecasters and strategic planners alike.

*Errorless UPPSC General Studies Prelim Paper 1 - 10 Year-wise Solved Papers (2010 - 19)* Disha Experts 2020-07-21

*2021-22 UPPCS General Studies & C-SAT* YCT Expert Team 2021-22 UPPCS General Studies & C-SAT

Previous Solved Papers

**The World's Search for Sustainable Development** Mukul Sanwal 2015-11-05 This text traces the evolution of sustainable development and climate change from the time it emerged in international consultations and agreements. The three sections of the book, focusing on the framework, climate change and sustainable development, seek to cover the essentials of the politics of natural resource usage at the global level. The book explores the evolution of sustainable development and climate change within the framework of the United Nations, and the way the concept has been defined through intergovernmental meetings, agreements and consensus within the multilateral system. It also explores the best ways of reducing the risk to the planet while enabling societies to pursue sustainable development paths. The challenges call for a transformation of social systems to facilitate a broadly acceptable change. The book also explores the adoption of low-carbon models different from the high-carbon socio-technical systems and related social practices.

**Interdiscipline** Petar Ramadanovic 2021-11-30 This book brings together two different discussions on the value of the humanities and a broader debate on interdisciplinary scholarship in order to propose a new way beyond current threats to the humanities. Petar Ramadanovic offers nothing short of a drastic rehaul of our approaches to literary scholarship, the humanities, and university systems. Beginning with an analysis of what is often referred to as the "crises" in the humanities, the author looks at the specifics of literary studies, but also issues around working conditions for academics. From precarity and pay conditions to peer review, the book has practical as well as theoretical implications that will resonate throughout the humanities. While most books defending the humanities emphasize the uniqueness of the subject or area, Ramadanovic does the opposite, emphasizing the need for interdisciplinarity and combined knowledge. This proposal is then fully explored through literary studies, and its potential throughout the humanities and beyond, into the sciences. Interdiscipline is not just a defense of literature and the humanities; it offers a clear and inspiring pathway forwards, drawing on all disciplines to show their cultural and social significance. The book is important reading for all scholars of literary studies, and also throughout the humanities.

**From Physics to Econophysics and Back: Methods and Insights** Siew Ann Cheong 2022-07-06 *Assessment of Solid-State Lighting, Phase Two* National Academies of Sciences, Engineering, and Medicine 2017-06-11 The standard incandescent light bulb, which still works mainly as Thomas Edison invented it, converts more than 90% of the consumed electricity into heat. Given the availability of newer lighting technologies that convert a greater percentage of electricity into useful light, there is potential to decrease the amount of energy used for lighting in both commercial and residential applications. Although technologies such as compact fluorescent lamps (CFLs) have emerged in the past few decades and will help achieve the goal of increased energy efficiency, solid-state lighting (SSL) stands to play a large role in dramatically decreasing U.S. energy consumption for lighting. Since the publication of the 2013 National Research Council report *Assessment of Advanced Solid-State Lighting*, the penetration of SSL has increased dramatically, with a resulting savings in energy and costs that were foreshadowed by that study. What was not anticipated then is the dramatic dislocation and restructuring of the SSL marketplace, as cost reductions for light-emitting diode (LED) components reduced profitability for LED manufacturers. At the same time, there has been the emergence of new applications for SSL, which have the potential to create new markets and commercial opportunities for the SSL industry. *Assessment of Solid-State Lighting, Phase Two* discusses these aspects of change—highlighting the progress of commercialization and acceptance of SSL and reviewing the technical advances and challenges in achieving higher efficacy for LEDs and organic light-emitting diodes. This report will also discuss the recent trends in SSL manufacturing and opportunities for new applications and describe the role played by the Department of Energy (DOE) Lighting Program in the development of SSL.

**Einstein Was Right** Jed Z. Buchwald 2020-10-13 An authoritative interdisciplinary account of the historic discovery of gravitational waves In 1915, Albert Einstein predicted the existence of gravitational waves—ripples in the fabric of spacetime caused by the movement of large masses—as part of the theory of general relativity. A century later, researchers with the Laser Interferometer Gravitational-Wave Observatory (LIGO) confirmed Einstein's prediction, detecting gravitational waves generated by the collision of two black holes. Shedding new light on the hundred-year history of this momentous achievement, *Einstein Was Right* brings together essays by two of the physicists who won the Nobel Prize for their instrumental roles in the discovery, along with contributions by leading scholars who offer unparalleled insights into one of the most significant scientific breakthroughs of our time. This illuminating book features an introduction by Tilman Sauer and invaluable firsthand perspectives on the history and significance of the LIGO consortium by physicists Barry Barish and Kip Thorne. Theoretical physicist Alessandra Buonanno discusses the new possibilities opened by gravitational wave astronomy, and sociologist of science Harry Collins and historians of science Diana Kormos Buchwald, Daniel Kennefick, and Jürgen Renn provide further insights into the history of relativity and LIGO. The book closes with a reflection by philosopher Don Howard on the significance of Einstein's theory for the philosophy of science. Edited by Jed Buchwald, *Einstein Was Right* is a compelling and thought-provoking account of one of the most thrilling scientific discoveries of the modern age.

**Optimizing the U.S. Ground-Based Optical and Infrared Astronomy System** National Research Council 2015-06-26 New astronomical facilities, such as the under-construction Large Synoptic Survey Telescope and planned 30-meter-class telescopes, and new instrumentation on existing optical and infrared (OIR) telescopes, hold the promise of groundbreaking research and discovery. How can we extract the best science from these and other astronomical facilities in an era of potentially flat federal budgets for both the facilities and the research grants? *Optimizing the U.S. Ground-Based Optical and Infrared Astronomy System* provides guidance for these new programs that align with the scientific priorities and the conclusions and recommendations of two National Research Council (NRC) decadal surveys, *New Worlds, New Horizons for Astronomy and Astrophysics* and *Vision and Voyages for Planetary Sciences in the Decade 2013-2022*, as well as other NRC reports. This report describes a vision for a U.S. OIR System that includes a telescope time exchange designed to enhance science return by broadening access to capabilities for a diverse community, an ongoing planning process to identify and construct next generation capabilities to realize decadal science priorities, and near-term critical coordination, planning, and instrumentation needed to usher in the era of LSST and giant telescopes.

**International Relations: Perspectives, Controversies and Readings** Keith L. Shimko 2015-01-01 Engaging and highly accessible, this reader-friendly text features broad coverage of key principles of international relations, providing a thorough introduction to the discipline while avoiding excessive detail and complexity. *International Relations: Perspectives, Controversies, and Readings, Fifth Edition*, explores essential concepts such as power politics, war and democracy, human nature, free trade, inequality, globalization, humanitarian intervention, and terrorism. Each chapter features brief, topical coverage presented within a debate framework, challenging you to think critically, consider diverse perspectives, and apply what you have learned to real-world scenarios. The author also includes current, relevant primary source readings, giving you firsthand exposure to the materials and ideas shaping international relations today. Thoroughly revised, the Fifth Edition of this popular text features updated content in nearly every chapter, including the most recent statistics, research, trends, theories, and examples drawn from today's headlines, including chemical weapons in Syria, the conflict between Russia and Ukraine, and the debate over climate change and global resources. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

**Radio Science Techniques for Deep Space Exploration** Sami W. Asmar 2022-03-29 Explore the development and state-of-the-art in deep space exploration using radio science techniques In *Radio Science Techniques for Deep Space Exploration*, accomplished NASA/JPL researcher and manager Sami Asmar delivers a multi-disciplinary exploration of the science, technology, engineering, mission operations, and signal processing relevant to deep space radio science. The book discusses basic principles before moving on to more advanced topics that include a wide variety of graphical illustrations and useful references to publications by experts in their respective fields. Complete explanations of changes in the characteristics of electromagnetic waves and the instrumentation and technology used in scientific experiments are examined. *Radio Science Techniques for Deep Space Exploration* offers answers to the question of how to explore the solar system with radio links and better understand the interior structures, atmospheres, rings, and surfaces of other planets. The author also includes: Thorough introductions to radio science techniques and systems needed to investigate planetary atmospheres, rings, and surfaces Comprehensive explorations of planetary gravity and interior structures, as well as relativistic and solar studies Practical discussions of instrumentation, technologies, and future directions in radio science techniques Perfect for students and professors of physics, astronomy, planetary science, aerospace engineering, and communications engineering, *Radio Science Techniques for Deep Space Exploration* will also earn a place in the libraries of engineers and scientists in the aerospace industry.