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875 - KIRBY ELLIS

Bimal G's book 'Solving the 111-Year-Old Riddle' opens an unexplored window of physics for the readers. Through this book, the author has aimed to solve the riddles generated by the theories of relativity and quantum mechanics. He believes that something is oddly wrong with the explanations and interpretations of these most celebrated theories even though the equations and its predictions are perfect and powerful. Puzzling paradoxes and logic-defying ideas had confounded the realm of physics ever since the formulation of special theory of relativity in 1905. By flouting reality, the theory of quantum mechanics too challenged common sense. Both these theories failed to give rational explanations to various natural phenomena. This book is a bold attempt to demystify the theories of relativity and quantum mechanics, which seem besotted with mathematical formalism than logical reasoning. It seeks to unite the two strong pillars of physics, fix the inconsistencies between them, and fill in the missing link by giving a new avatar to absolute space and time. In the process, the author puts forth a revolutionary new theory that removes paradoxes in the realm of physics, redefines the puzzling inertia and explains the riddling dark matter & dark energy along with other natural phenomena and scientific experiments.

Quantum Mechanics and its applications are a vibrant, central part of today's research in both experimental and theoretical physics. Designed for the one-semester course, Quantum Mechanics expertly guides students through rigorous course material, providing comprehensive explanations, accessible examples, and intuitive equations. This text's in-depth coverage of essential topics, such as harmonic oscillator, barrier penetration, and hydrogen atoms, skillfully bridges the gap between sophomore introduction texts and lower-level graduate treatments. Students will find this user-friendly text, with numerous examples and applications, sets a solid foundation for future courses in the area of Quantum Mechanics.

Award-winning journalist Gerard Colby takes readers behind the scenes of one of America's most powerful and enduring corporations; now with a new introduction by the author Their name is everywhere. America's wealthiest industrial family by far and a vast financial power, the Du Ponts, from their mansions in northern Delaware's "Chateau Country," have long been leaders in the relentless drive to turn the United States into a plutocracy. The Du Pont story in this country began in 1800. Éleuthère Irénée du Pont, official keeper of the gunpowder of corrupt King Louis XVI, fled from revolutionary France to America. Two years later he founded the gunpowder company that called itself "America's armorer"—and that President Wilson's secretary of war called a "species of outlaws" for war profiteering. Du Pont Dynasty introduces many colorful characters, including "General" Henry du Pont, who profited from the Civil War to build the Gunpowder Trust, one of the first corporate monopolies; Alfred I. du Pont, betrayed by his cousins and pushed out of the organization, landing in social exile as the powerful "Count of Florida"; the three brothers who expanded Du Pont's control to General Motors, fought autoworkers' right to unionize, and then launched a family tradition of waging campaigns to destroy FDR's New Deal regulatory reforms; Governor Pete du Pont, who ran for president and backed Newt Gingrich's 1994 Republican Revolution; and Irving S. Shapiro, the architect of Du Pont's ongoing campaign to undermine effective environmental regulation. From plans to force President Roosevelt from office, to munitions sales to warlords and the rising Nazis, to Freon's damage to the planet's life-protecting ozone layer, to the manufacture of deadly gases and the covered-up poisoning of Du Pont workers, to the reputation the company earned for being the worst polluter of America's air and water, the Du Pont reign has been dappled with scandal for centuries. Culled from years of painstaking research and interviews, this fully documented book unfolds like a novel. Laying bare the bitter feuds, power plays, smokescreens, and careless unaccountability that erupted in murder, Colby pulls back the curtain on a dynasty whose formidable influence continues to this day. Suppressed in myriad ways and the subject of the author's landmark federal lawsuit, Du Pont Dynasty is an essential history of the United States.

The development of man's understanding of planetary motions is the crown jewel of Newtonian mechanics. This book offers a concise but self-contained handbook-length treatment of this historically important topic for students at about the third-year-level of an undergraduate physics curriculum. After opening with a review of Kepler's three laws of planetary motion, it proceeds to analyze the general dynamics of 'central force' orbits in spherical coordinates, how elliptical orbits satisfy Newton's gravitational law, and how the geometry of ellipses relates to physical quantities, such as energy and momentum. Exercises are provided, and derivations are set up in such a way that readers can gain analytic practice by filling in the missing steps. A brief bibliography lists sources for readers who wish to pursue further study on their own.

Inspired by Richard Feynman and J.J. Sakurai, A Modern Approach to Quantum Mechanics allows lecturers to expose their undergraduates to Feynman's approach to quantum mechanics while simultaneously giving them a textbook that is well-ordered, logical and pedagogically sound. This book covers all the topics that are typically presented in a standard upper-level course in quantum mechanics, but its teaching approach is new. Rather than organizing his book according to the historical development of the field and jumping into a mathematical discussion of wave mechanics, Townsend begins his book with the quantum mechanics of spin. Thus, the first five chapters of the book succeed in laying out the fundamentals of quantum mechanics with little or no wave mechanics, so the physics is not obscured by mathematics. Starting with spin systems it gives students straightfoward examples of the structure of quantum mechanics. When wave mechanics is introduced later, students should perceive it correctly as only one aspect of quantum mechanics and not the core of the subject.

Inquires into the role of the unexpected in world politics by examining the protean power effects of agile innovation and impro-

visation.
The development of atomic bombs under the auspices of the U. S. Army’s Manhattan Project during World War II is considered to be the outstanding news story of the twentieth century. In this book, a physicist and expert on the history of the Project presents a comprehensive overview of this momentous achievement. The first three chapters cover the history of nuclear physics from the discovery of radioactivity to the discovery of fission, and would be ideal for instructors of a sophomore-level “Modern Physics” course. Student-level exercises at the ends of the chapters are accompanied by answers. Chapter 7 covers the physics of first-generation fission weapons at a similar level, again accompanied by exercises and answers. For the interested layman and for non-science students and instructors, the book includes extensive qualitative material on the history, organization, implementation, and results of the Manhattan Project and the Hiroshima and Nagasaki bombing missions. The reader also learns about the legacy of the Project as reflected in the current world stockpiles of nuclear weapons.
All students of physics encounter the Bohr model of the atom. However, it is often covered quickly in order that curricula can progress to wave mechanics. This book gives students and instructors a fuller exploration to Bohr's model. Topics covered include the historical background to the model, Bohr's approach to his original derivation, and corollary issues such as the role of angular momentum in the theory, ionized helium, the correspondence principle, the fine-structure constant, de Broglie matter-waves, application of the theory to the diatomic hydrogen molecule, and the magnetic field created by the orbiting electron. It also includes student exercises, a bibliography, a list of important physical constants, and a survey of Bohr's subsequent life and career. Key Features Provides a full historical background to Bohr's model, a detailed derivation, and corollary calculations associated with the model Serves as a supplementary text to undergraduate physics courses Contains exercises, and a list of important physical constants

Though thousands of articles and books have been published on various aspects of the Manhattan Project, this book is the first comprehensive single-volume history prepared by a specialist for curious readers without a scientific background. This project, the United States Army’s program to develop and deploy atomic weapons in World War II, was a pivotal event in human history. The author presents a wide-ranging survey that not only tells the story of how the project was organized and carried out, but also introduces the leading personalities involved and features simplified but accurate descriptions of the underlying science and the engineering challenges. The technical points are illustrated by reader-friendly graphics. .
"All students of physics encounter the Bohr model of the atom. However, it is often covered quickly in order that curricula can progress to wave mechanics. This book gives students and instructors a fuller exploration to Bohr's model. Topics covered include the historical background to the model, Bohr's approach to his original derivation, and corollary issues such as the role of angular momentum in the theory, ionized helium, the correspondence principle, the fine-structure constant, de Broglie matter-waves, application of the theory to the diatomic hydrogen molecule, and the magnetic field created by the orbiting electron. It also includes student exercises, a bibliography, a list of important physical constants, and a survey of Bohr's subsequent life and career." -- Prové de l'editor.
Few revolutions in science have been more far-reaching--but less understood--than the quantum revolution in physics. Everyday experience cannot prepare us for the sub-atomic world, where quantum effects become all-important. Here, particles can look like waves, and vice versa; electrons seem to lose their identity and instead take on a shifting, unpredictable appearance that depends on how they are being observed; and a single photon may sometimes behave as if it could be in two places at once. In the world of quantum mechanics, uncertainty and ambiguity become not just unavoidable, but essential ingredients of science--a development so disturbing that to Einstein "it was as if God were playing dice with the universe." And there is no one better able to explain the quantum revolution as it approaches the century mark than David Lindley. He brings the quantum revolution full circle, showing how the familiar and trustworthy reality of the world around us is actually a consequence of the ineffable uncertainty of the subatomic quantum world--the world we can't see.
In August 1945, two US Army Air Force B-29 bombers each dropped single “atomic bombs” on the Japanese cities of Hiroshima and Nagasaki. Little Boy and Fat Man each exploded with energies equivalent to more than 10,000 tons of conventional explosive. Just seven years later, in October 1952, the Ivy Mike test saw the detonation of America’s first full-scale thermonuclear weapon that achieved a yield over 400 times as much as Little Boy and Fat Man. The invention of nuclear weapons was one of the most stunning scientific and technological developments of the 20th century. Carried out under the auspices of the United States Army’s Manhattan Project, this development had profound immediate and long-term impacts: the bombings of Hiroshima and Nagasaki helped bring World War II to a close, but set the stage for the Cold War, nuclear proliferation, and fear of nuclear annihilation and terrorism. This volume, prepared by an acknowledged expert on the Manhattan Project, gives a concise, fast--paced account of all major aspects of the project at a level accessible to an undergraduate college or advanced high-school student familiar with some basic concepts of energy, atomic structure, and isotopes. The text describes the underlying scientific discoveries that made nuclear weapons possible, how the project was organized, the daunting challenges faced and overcome in obtaining fissile uranium and plutonium and in designing workable bombs, the dramatic Trinity test carried out in the desert of southern New Mexico in July 1945, and the bombings of Hiroshima and Nagasaki. The final chapter surveys current worldwide nuclear weapons deployments, and a bibliography lists sources of published and online information along with numerous links.

The Old Quantum Theory explains how the classical laws were modified by Planck, Einstein, Rutherford, Bohr, and other contributors to account for atomic phenomena, comprising the development of quantum theory from its start at the very end of the 19th century until the beginning of the 20th century. This book begins by discussing Planck's discovery of his radiation law, followed by Einstein's introduction to quanta. Next is a description of the Rutherford model of the atom and Bohr's postulates, which are confirmed by the Franck-Hertz experiment. This selection concludes with a description of how Bohr's theory could explain the main features of the atomic spectra. A brief summary of other important developments in the period are also elaborated. This publication is beneficial to students and researchers conducting work on the history of quantum mechanics from the 1900s to the development of wave mechanics.
Our world is being revolutionized by data-driven methods: access to large amounts of data has generated new insights and opened exciting new opportunities in commerce, science, and computing applications. Processing the enormous quantities of data necessary for these advances requires large clusters, making distributed computing paradigms more crucial than ever. MapReduce is a programming model for expressing distributed computations on

massive datasets and an execution framework for large-scale data processing on clusters of commodity servers. The programming model provides an easy-to-understand abstraction for designing scalable algorithms, while the execution framework transparently handles many system-level details, ranging from scheduling to synchronization to fault tolerance. This book focuses on MapReduce algorithm design, with an emphasis on text processing algorithms common in natural language processing, information retrieval, and machine learning. We introduce the notion of MapReduce design patterns, which represent general reusable solutions to commonly occurring problems across a variety of problem domains. This book not only intends to help the reader "think in MapReduce", but also discusses limitations of the programming model as well. This volume is a printed version of a work that appears in the Synthesis Digital Library of Engineering and Computer Science. Synthesis Lectures provide concise, original presentations of important research and development topics, published quickly, in digital and print formats. For more information visit www.morganclaypool.com

“Bruce Schneier’s amazing book is the best overview of privacy and security ever written.”—Clay Shirky “Bruce Schneier’s amazing book is the best overview of privacy and security ever written.”—Clay Shirky Your cell phone provider tracks your location and knows who’s with you. Your online and in-store purchasing patterns are recorded, and reveal if you're unemployed, sick, or pregnant. Your e-mails and texts expose your intimate and casual friends. Google knows what you’re thinking because it saves your private searches. Facebook can determine your sexual orientation without you ever mentioning it. The powers that surveil us do more than simply store this information. Corporations use surveillance to manipulate not only the news articles and advertisements we each see, but also the prices we’re offered. Governments use surveillance to discriminate, censor, chill free speech, and put people in danger worldwide. And both sides share this information with each other or, even worse, lose it to cybercriminals in huge data breaches. Much of this is voluntary: we cooperate with corporate surveillance because it promises us convenience, and we submit to government surveillance because it promises us protection. The result is a mass surveillance society of our own making. But have we given up more than we’ve gained? In Data and Goliath, security expert Bruce Schneier offers another path, one that values both security and privacy. He brings his bestseller up-to-date with a new preface covering the latest developments, and then shows us exactly what we can do to reform government surveillance programs, shake up surveillance-based business models, and protect our individual privacy. You'll never look at your phone, your computer, your credit cards, or even your car in the same way again.

The theme of The Planetary Clock is the representation of time in postmodern culture and the way temporality as a global phenomenon manifests itself differently across an antipodean axis. To trace postmodernism in an expansive spatial and temporal arc, from its formal experimentation in the 1960s to environmental concerns in the twenty-first century, is to describe a richer and more complex version of this cultural phenomenon. Exploring different scales of time from a Southern Hemisphere perspective, with a special emphasis on issues of Indigeneity and the Anthropocene, The Planetary Clock offers a wide-ranging, revisionist account of postmodernism, reinterpreting literature, film, music, and visual art of the post-1960 period within a planetary framework. By bringing the culture of Australia and New Zealand into dialogue with other Western narratives, it suggests how an antipodean impulse, involving the transposition of the world into different spatial and temporal dimensions, has long been an integral (if generally occluded) aspect of postmodernism. Taking its title from a Florentine clock designed in 1510 to measure worldly time alongside the rotation of the planets, The Planetary Clock ranges across well-known American postmodernists (John Barth, Toni Morrison) to more recent science fiction writers (Octavia Butler, Richard Powers), while bringing the US tradition into juxtaposition with both its English (Philip Larkin, Ian McEwan) and Australian (Les Murray, Alexis Wright) counterparts. By aligning cultural postmodernism with music (Messiaen, Ligeti, Birtwistle), the visual arts (Hockney, Blackman, Fiona Hall), and cinema (Rohmer, Haneke, Tarantino), this volume enlarges our understanding of global postmodernism for the twenty-first century.

and less as the emanation unden\'ent radioactive decay, and it became motion less after about 30 seconds. Since this process was occurring very rapidly, Hahn and Sackur marked the position of the pointer on a scale with pencil marks. As a timing device they used a metronome that beat out intervals of approximately 1. 3 seconds. This simple method enabled them to determine that the half-life of the emanations of actinium and emanium were the same. Although Giesel's measurements had been more precise than Debierne's, the name of actinium was retained since Debierne had made the discovery first. Hahn now returned to his sample of barium chloride. He soon conjectured that the radium-enriched preparations must harbor another radioactive sub stance. The liquids resulting from fractional crystallization, which were sup posed to contain radium only, produced two kinds of emanation. One was the long-lived emanation of radium, the other had a short life similar to the emanation produced by thorium. Hahn tried to separate this substance by adding some iron to the solutions that should have been free of radium, but to no avail. Later the reason for his failure became apparent. The element that emitted the thorium emanation was constantly replenished by the ele ment believed to be radium. Hahn succeeded in enriching a preparation until it was more than 100,000 times as intensive in its radiation as the same quantity of thorium.

An understanding of quantum mechanics is vital to all students of physics, chemistry and electrical engineering, but requires a lot of mathematical concepts, the details of which are given with great clarity in this book. Various concepts have been derived from first principles, so it can also be used for self-study. The chapters on the JWKB approximation, time-independent perturbation theory and effects of magnetic field stand out for their clarity and easy-to-understand mathematics. Two complete chapters on the linear harmonic oscillator provide a very detailed discussion of one of the most fundamental problems in quantum mechanics. Operator algebra is used to show the ease with which one can calculate the harmonic oscillator wave functions and study the evolution of the coherent state. Similarly, three chapters on angular momentum give a detailed account of this important problem. Perhaps the most attractive feature of the book is the excellent balance between theory and applications and the large number of applications in such diverse areas as astrophysics, nuclear physics, atomic and molecular spectroscopy, solid-state physics, and quantum well structures.

Between the 18th and 19th centuries, Britain experienced massive leaps in technological, scientific, and economical advancement

The program of the Institute covered several aspects of functional integration -from a robust mathematical foundation to many applications, heuristic and rigorous, in mathematics, physics, and chemistry. It included analytic and numerical computational techniques. One of the goals was to encourage cross-fertilization between these various aspects and disciplines. The first week was focused on quantum and classical systems with a finite number of degrees of freedom; the second week on field theories. During

the first week the basic course, given by P. Cartier, was a presentation of a recent rigorous approach to functional integration which does not resort to discretization, nor to analytic continuation. It provides a definition of functional integrals simpler and more powerful than the original ones. Could this approach accommodate the works presented by the other lecturers? Although much remains to be done before answering "Yes," there seems to be no major obstacle along the road. The other courses taught during the first week presented: a) a solid introduction to functional numerical techniques (A. Sokal) and their applications to functional integrals encountered in chemistry (N. Makri). b) integrals based on Poisson processes and their applications to wave propagation (S. K. Foong), in particular a wave-restorer or wave-designer algorithm yielding the initial wave profile when one can only observe its distortion through a dissipative medium. c) the formulation of a quantum equivalence principle (H. Kleinert) which. given the flat space theory, yields a well-defined quantum theory in spaces with curvature and torsion.

The development of nuclear weapons during the Manhattan Project is one of the most significant scientific events of the twentieth century. This book, prepared by a gifted teacher of physics, explores the challenges that faced the members of the Manhattan project. In doing so it gives a clear introduction to fission weapons at the level of an upper-level undergraduate physics student. Details of nuclear reactions, their energy release, the fission process, how critical masses can be estimated, how fissile materials are produced, and what factors complicate bomb design are covered. An extensive list of references and a number of problems for self-study are included. Links are given to several spreadsheets with which users can run many of the calculations for themselves.

This computer-based laboratory manual contains experiments in mechanics, thermodynamics, E&M, and optics using hardware and software designed to enhance readers' understanding of calculus-based physics concepts. The manual makes use of an active learning cycle, including concept overviews, hypothesis-testing, prediction-making, and investigations.

The development of nuclear weapons during the Manhattan Project is one of the most significant scientific events of the twentieth century. This revised and updated 3rd edition explores the challenges that faced the scientists and engineers of the Manhattan Project. It gives a clear introduction to fission weapons at the level of an upper-year undergraduate physics student by examining the details of nuclear reactions, their energy release, analytic and numerical models of the fission process, how critical masses can be estimated, how fissile materials are produced, and what factors complicate bomb design. An extensive list of references and a number of exercises for self-study are included. Links are given to several freely-available spread sheets which users can use to run many of the calculations for themselves.

Quantum mechanics is one of the most fascinating elements of the physics curriculum, but its conceptual nuances and mathematical complexity can be daunting for beginning students. This user-friendly text is designed for a one-semester course which bridges the gap between sophomore-level treatments and advanced undergraduate/lower-graduate courses. Qualitative explanations and descriptions of historical background are combined with detailed mathematical analyses to help students establish a firm foundation for further study. Classical problems such potential wells, barrier penetration, alpha decay, the harmonic oscillator, and the hydrogen atom are examined in detail, and formalisms and techniques such as operators, expectation values, commutators, perturbation theory, numerical solutions, and the variational theorem are also covered. Particular emphasis is placed on providing numerous worked examples and exercises.

The aim of this volume is to explain the differences between research-level mathematics and the maths taught at school. Most differences are philosophical and the first few chapters are about general aspects of mathematical thought.

The instant New York Times bestseller about humanity's place in the universe—and how we understand it. “Vivid...impressive....Splendidly informative.”—The New York Times “Succeeds spectacularly.”—Science “A tour de force.”—Salon Already internationally acclaimed for his elegant, lucid writing on the most challenging notions in modern physics, Sean Carroll is emerging as one of the greatest humanist thinkers of his generation as he brings his extraordinary intellect to bear not only on Higgs bosons and extra dimensions but now also on our deepest personal questions: Where are we? Who are we? Are our emotions, our beliefs, and our hopes and dreams ultimately meaningless out there in the void? Do human purpose and meaning fit into a scientific worldview? In short chapters filled with intriguing historical anecdotes, personal asides, and rigorous exposition, readers learn the difference between how the world works at the quantum level, the cosmic level, and the human level—and then how each connects to the other. Carroll's presentation of the principles that have guided the scientific revolution from Darwin and Einstein to the origins of life, consciousness, and the universe is dazzlingly unique. Carroll shows how an avalanche of discoveries in the past few hundred years has changed our world and what really matters to us. Our lives are dwarfed like never before by the immensity of space and time, but they are redeemed by our capacity to comprehend it and give it meaning. The Big Picture is an unprecedented scientific worldview, a tour de force that will sit on shelves alongside the works of Stephen Hawking, Carl Sagan, Daniel Dennett, and E. O. Wilson for years to come.

The Routledge Handbook of Research Methods for Social-Ecological Systems provides a synthetic guide to the range of methods that can be employed in social-ecological systems (SES) research. The book is primarily targeted at graduate students, lecturers and researchers working on SES, and has been written in a style that is accessible to readers entering the field from a variety of different disciplinary backgrounds. Each chapter discusses the types of SES questions to which the particular methods are suited and the potential resources and skills required for their implementation, and provides practical examples of the application of the methods. In addition, the book contains a conceptual and practical introduction to SES research, a discussion of key gaps and frontiers in SES research methods, and a glossary of key terms in SES research. Contributions from 97 different authors, situated at SES research hubs in 16 countries around the world, including South Africa, Sweden, Germany and Australia, bring a wealth of expertise and experience to this book. The first book to provide a guide and introduction specifically focused on methods for studying SES, this book will be of great interest to students and scholars of sustainability science, environmental management, global environmental change studies and environmental governance. The book will also be of interest to upper-level undergraduates and professionals working at the science–policy interface in the environmental arena.

"The science-fiction genre known as steampunk juxtaposes futuristic technologies with Victorian settings. This fantasy is becoming reality at the intersection of two scientific fields-twenty-first--century quantum physics and nineteenth-century thermodynamics, or the study of energy-in a discipline known as quantum steampunk"--

In this compelling introduction to the fundamental particles that make up the universe, Frank Close takes us on a journey into the

atom to examine known particles such as quarks, electrons, and the ghostly neutrino. Along the way he provides fascinating insights into how discoveries in particle physics have actually been made, and discusses how our picture of the world has been radically revised in the light of these developments. He concludes by looking ahead to new ideas about the mystery of antimatter, the number of dimensions that there might be in the universe, and to what the next 50 years of research might reveal. ABOUT THE SERIES: The Very Short Introductions series from Oxford University Press contains hundreds of titles in almost every subject area. These pocket-sized books are the perfect way to get ahead in a new subject quickly. Our expert authors combine facts, analysis, perspective, new ideas, and enthusiasm to make interesting and challenging topics highly readable.

--Book Jacket.

This book takes readers back and forth through time and makes the past accessible to all families, students and the general reader and is an unprecedented collection of a list of events in chronological order and a wealth of informative knowledge about the rise and fall of empires, major scientific breakthroughs, groundbreaking inventions, and monumental moments about everything that has ever happened.

This set of lecture notes on quantum mechanics aims to teach, in a simple and straightforward manner, the basic theory behind the subject, drawing on examples from all fields of physics to provide both background as well as context. The self-contained book includes a review of classical mechanics and some of the necessary mathematics. Both the standard fare of quantum mechanics texts — the harmonic oscillator, the hydrogen atom, angular momentum as well as topics such as symmetry with a discussion on periodic potentials, the relativistic electron, spin and scattering theory are covered. Approximation methods are discussed with a view to applications; these include stationary perturbation theory, the WKB approximation, time dependent perturbations and the variational principle. Together, the seventeen chapters provide a very comprehensive introduction to quantum mechanics. Selected problems are collected at the end of each chapter in addition to the numerous exercises sprinkled throughout the text. The book is written in a simple and elegant style, and is characterized by clarity, depth and excellent pedagogical organization.

Physics of Nuclei and Particles, Volume II explores the prevalent descriptive methods used in nuclear and particle physics, with emphasis on the phenomenological and model-based aspects. The interactions of nuclear particles are discussed, along with nuclear forces and potentials and scattering and reaction models employed in nuclear physics. The nuclear structure and models of the nucleus are also considered. Comprised of four chapters, this volume begins with a review of the characteristics of nucleons and other particles that play a role in nuclear interaction processes in order to gain further insight into the underlying physical problems. Neutron physics, antinucleons, deuteron physics, and two-body nuclear forces are highlighted, together with three- and four- nucleon systems and heavy-ion physics. The next three chapters deal with nuclear forces and potentials, as deduced from nuclear dynamics (scattering and polarization); scattering and reaction models used in nuclear physics; and nuclear models such as the shell model, models of deformed nuclei, and many--body self-consistent models. The book concludes with an analysis of the Brueckner-Bethe-Goldstone theory of nuclear matter. This book will be of interest to physicists.

The development of nuclear weapons by the Manhattan Project during World War II was one of the most dramatic scientific/technological episodes in human history. This book, prepared by a recognized expert on the Manhattan Project, offers a concise survey of the essential physics concepts underlying fission weapons. The text describes the energetics and timescales of fast-neutron chain reactions, why only certain isotopes of uranium and plutonium are suitable for use in fission weapons, how critical mass and bomb yield can be estimated, how the efficiency of nuclear weapons can be enhanced, how the fissile forms of uranium and plutonium were obtained, some of the design details of the 'Little Boy' and 'Fat Man' bombs, and some of the thermal, shock, and radiation effects of nuclear weapons. Calculation exercises are provided, and a Bibliography lists authoritative print and online sources of information for readers who wish to pursue more detailed study of this fascinating topic.