Primer Of Quantum Mechanics Marvin Chester

Geared toward advanced undergraduates and graduate students, this text develops the concepts of electrical acceleration of gases for propulsion, from primary physical principles to realistic space thruster designs. 1968 edition.

Focusing on the principles of quantum mechanics, this text for upper-level undergraduates and graduate students introduces and resolves special physical problems with more than 100 exercises. 1967 edition.

Exploration of stochastic control theory in terms of analysis, parametric optimization, and optimal stochastic control. Limited to linear systems with quadratic criteria; covers discrete time and continuous time systems. 1970 edition.

An unrivaled text in the field of celestial mechanics, Moulton's theoretical work on the prediction and interpretation of celestial phenomena has not been superseded. By providing a general account of all parts of celestial mechanics without an over-full treatment of any single aspect, by stating all the problems in advance, and, where the transformations are long, giving an outline of the steps which must be made, and by noting all the places where assumptions have been introduced or unjustified methods employed, Moulton has insured that his work will be valuable to all who are interested in the subject. The text is divided into ten chapters which progress logically in terms of the difficulty of their subject matter. They are: Fundamental Principles and Definitions, Rectilinear Motion, Central Forces, The Potential and Attractions of Bodies, The Problem of Two Bodies, The Determination of Orbits, The General Integrals of the Problem of n Bodies, The Problem of Three Bodies, Perturbations ? Geometrical Considerations, and Perturbations ? Analytical Method. Important topics cove red include general equations, motion of falling particles, the heat of the sun, simultaneous differential equations, examples where J is a function of the coordinates alone, the universality of Newton's law, determination of the orbit from the law of force, attractions of simple solids, potential and attractions of simple bodies and ellipsoids, Ivory's method and level surfaces, elements of orbits, expansions and positions in orbits, transformations of coordinates, the Laplacian and Gaussian methods of determining orbits, motion of center of mass and area integrals, motion of the infinitesimal body, surfaces of zero relative velocity, effects of the components of the disturbing force, lunar theory, method of computing perturbations, and the perturbative function. Each chapter is followed by a historical sketch and bibliography pertaining to that subject. Over 200 problems appear at key points in the text, many of them answered.

"Written by an expert pair of Soviet mathematicians, this compilation presents 160 lucidly expressed problems in quantum mechanics plus completely worked-out solutions. A high-level supplement rather than a primary text, it constitutes a masterful complement to advanced undergraduate and graduate texts and courses in quantum mechanics. 1963 edition"--

This introductory survey of stochastic methods and techniques in quantum physics, functional analysis, probability theory, communications, and electrical engineering also serves as a useful and comprehensive reference volume. 1979 edition.

Explores the mechanics of solids and statics as well as the strength of materials and elasticity theory. Features design exercises that encourage creative initiative and systems thinking.

This comprehensive text provides upper-level undergraduates and graduate students with an accessible introduction to the implementation of quantum ideas in molecular modeling, exploring practical applications alongside theoretical explanations. Topics include the Hartree-Fock method; matrix SCF equations; implementation of the closed-shell case; introduction to molecular integrals; and much more. 1998 edition.

Geared toward upper-level undergraduates, this text introduces three aspects of optimal control theory: dynamic programming, Pontryagin's minimum principle, and numerical techniques for trajectory optimization. Numerous problems, which introduce additional topics and illustrate basic concepts, appear throughout the text. Solution guide available upon request. 131 figures. 14 tables. 1970 edition.

Explores sets and relations, the natural number sequence and its generalization, extension of natural numbers to real numbers, logic, informal axiomatic mathematics, Boolean algebras, informal axiomatic set theory, several algebraic theories, and 1st-order theories.

Highly useful text studies logarithmic measures of information and their application to testing statistical hypotheses. Includes numerous worked examples and problems. References. Glossary. Appendix. 1968 2nd, revised edition.

This text examines the reinterpretation of calculus by Augustin-Louis Cauchy and his peers in the 19th century. These intellectuals created a collection of well-defined theorems about limits, continuity, series, derivatives, and integrals. 1981 edition.

Leibniz's own accounts of his work, plus critical and historical notes and essays, include his "Historia et Origio Calculi Differentialis," manuscripts of the period 1673-77, and essays by C. I. Gerhardt.

Among the finest, most comprehensive treatments of theoretical physics ever written, this classic volume comprises a superb introduction to the main branches of the discipline and offers solid grounding for further research in a variety of fields. Students will find no better one-volume coverage of so many essential topics; moreover, since its first publication, the book has been substantially revised and updated with additional material on Bessel functions, spherical harmonics, superconductivity, elastomers, and other subjects. The first four chapters review mathematical topics needed by theoretical and experimental physicists (vector analysis, mathematical representation of periodic phenomena, theory of vibrations and waves, theory of functions of a complex variable, the calculus of variations, and more). This material is followed by exhaustive coverage of mechanics (including elasticity and fluid mechanics, as well as relativistic mechanics), a highly detailed treatment of electromagnetic theory, and thorough discussions of thermodynamics, kinetic theory and statistical mechanics, quantum mechanics and nuclear physics. Now available for the first time in paperback, this wide-ranging overview also contains an extensive 40-page appendix which provides detailed solutions to the numerous exercises included throughout the text. Although first published over 50 years ago, the book remains a solid, comprehensive survey, so well written and carefully planned that undergraduates as well as graduate students of theoretical and experimental physics will find it an indispensable reference they will turn to again and again.

Mathematical economics and game theory approached with the fundamental mathematical toolbox of nonlinear functional analysis are the central themes of this text. Both optimization and equilibrium theories are covered in full detail. The book's central

application is the fundamental economic problem of allocating scarce resources among competing agents, which leads to considerations of the interrelated applications in game theory and the theory of optimization. Mathematicians, mathematical economists, and operations research specialists will find that it provides a solid foundation in nonlinear functional analysis. This text begins by developing linear and convex analysis in the context of optimization theory. The treatment includes results on the existence and stability of solutions to optimization problems as well as an introduction to duality theory. The second part explores a number of topics in game theory and mathematical economics, including two-person games, which provide the framework to study theorems of nonlinear analysis. The text concludes with an introduction to non-linear analysis and optimal control theory, including an array of fixed point and subjectivity theorems that offer powerful tools in proving existence theorems.

Graduate-level monograph develops theoretical ideas in a relatively informal manner. Nuclear scattering, nuclear scattering by crystals, scattering by liquids, neutron optics, polarization analysis, much more. Problem examples at chapter ends. Prerequisites are some familiarity with basic concepts of quantum mechanics and solid state physics. Solutions. Bibliography. Appendixes. 1978 edition.

Mathematically rigorous introduction covers vector and matrix norms, the condition-number of a matrix, positive and irreducible matrices, much more. Only elementary algebra and calculus required. Includes problem-solving exercises. 1968 edition.

This graduate-level text introduces fundamentals of classical mechanics; surveys basics of quantum mechanics; and concludes with a look at group theory and quantum mechanics of the atom. 1963 edition.

Classic undergraduate text explores wave functions for the hydrogen atom, perturbation theory, the Pauli exclusion principle, and the structure of simple and complex molecules. Numerous tables and figures.

Written in response to the dearth of practical and meaningful textbooks in the field of fundamental continuum mechanics, this comprehensive treatment offers students and instructors an immensely useful tool. Its 115 solved problems and exercises not only provide essential practice but also systematically advance the understanding of vector and tensor theory, basic kinematics, balance laws, field equations, jump conditions, and constitutive equations. Readers follow clear, formally precise steps through the central ideas of classical and modern continuum mechanics, expressed in a common, efficient notation that fosters quick comprehension and renders these concepts familiar when they reappear in other contexts. Completion of this brief course results in a unified basis for work in fluid dynamics and the mechanics of solid materials, a foundation of particular value to students of mathematics and physics, those studying continuum mechanics at an intermediate or advanced level, and postgraduate students in the applied sciences. "Should be excellent in its intended function as a problem book to accompany a lecture course." — Quarterly of Applied Math.

An authoritative early exposition of relativity theory, this reader-friendly book describes the physical doctrines of the special and general theories of relativity in terms of their philosophic significance. A clear, nonmathematical introduction to a complex subject, this book offers readers of all backgrounds a coherent and informative overview. 1920 edition.

Useful treatment of classical mechanics, electromagnetic theory, and relativity includes

explanations of function theory, vectors, matrices, dyadics, tensors, partial differential equations, other advanced mathematical techniques. Nearly 200 problems with answers.

Introductory text, geared toward advanced undergraduate and graduate students, applies mathematics of Cartesian and general tensors to physical field theories and demonstrates them in terms of the theory of fluid mechanics. 1962 edition.

Handy one-volume edition. Part I considers general foundations of theory of functions; Part II stresses special and characteristic functions. Proofs given in detail. Introduction. Bibliographies.

DIVAnalysis of channel models and proof of coding theorems; study of specific coding systems; and study of statistical properties of information sources. Sixty problems, with solutions. Advanced undergraduate to graduate level. /div

This unusually clear and interesting classic offers a thorough and reliable treatment of an important branch of higher analysis. The work covers real numbers and sequences, foundations of the theory of infinite series, and development of the theory (series of valuable terms, Euler's summation formula, asymptotic expansions, and other topics). Exercises throughout. Ideal for self-study.

Landmark lectures (1909) by Nobel Prize winner deal with application of quantum hypothesis to blackbody radiation, principle of least action, relativity theory, and more. 1915 edition.

Introductory text examines classical quantum bead on a track: state and representations; operator eigenvalues; harmonic oscillator and bound bead in a symmetric force field; bead in spherical shell. 1992 edition.

The basic concepts of relativity theory are conveyed through worked and unworked examples in this text, which requires only elementary algebra and emphasizes physical principles and concepts. 1985 edition.

This well-known text provides a relatively elementary introduction to distribution theory and describes generalized Fourier and Laplace transformations and their applications to integrodifferential equations, difference equations, and passive systems. Suitable for a graduate course for engineering and science students or for an advanced undergraduate course for mathematics majors. 1965 edition.

This advanced text explores the theory of groups and their matrix representations. The main focus rests upon point and space groups, with applications to electronic and vibrational states. 1969 edition.

Starting with the fundamentals of number theory, this text advances to an intermediate level. Author Harold N. Shapiro, Professor Emeritus of Mathematics at New York University's Courant Institute, addresses this treatment toward advanced undergraduates and graduate students. Selected chapters, sections, and exercises are appropriate for undergraduate courses. The first five chapters focus on the basic material of number theory, employing special problems, some of which are of historical interest. Succeeding chapters explore evolutions from the notion of congruence, examine a variety of applications related to counting problems, and develop the roots of number theory. Two "do-it-yourself" chapters offer readers the chance to carry out small-scale mathematical investigations that involve material covered in previous chapters.

Philosophic, less formalistic approach to analytical mechanics offers model of clear, scholarly exposition at graduate level with coverage of basics, calculus of variations,

principle of virtual work, equations of motion, more.

This classic textbook by two mathematicians from the USSR's prestigious Kharkov Mathematics Institute introduces linear operators in Hilbert space, and presents in detail the geometry of Hilbert space and the spectral theory of unitary and self-adjoint operators. It is directed to students at graduate and advanced undergraduate levels, but because of the exceptional clarity of its theoretical presentation and the inclusion of results obtained by Soviet mathematicians, it should prove invaluable for every mathematician and physicist. 1961, 1963 edition.

Designed to familiarize undergraduates with the methods of vector algebra and vector calculus, this text offers both a clear view of the abstract theory as well as a concise survey of the theory's applications to various branches of pure and applied mathematics. A chapter on differential geometry introduces readers to the study of this subject by the methods of vector algebra. The next section explores the many aspects of the theory of mechanics adaptable to the use of vectors, and a full discussion of the vector operator "nabla" proceeds to a treatment of potential theory and Laplace's equation. This includes applications to the theories of gravitation, hydrodynamics, and electricity. A brief chapter on four-dimensional vectors concludes the text.

Here is clear, well-organized coverage of the most standard theorems, including isomorphism theorems, transformations and subgroups, direct sums, abelian groups, and more. This undergraduate-level text features more than 500 exercises.

Basic treatment includes existence theorem for solutions of differential systems where data is analytic, holomorphic functions, Cauchy's integral, Taylor and Laurent expansions, more. Exercises. 1973 edition.

A century ago, Georg Cantor demonstrated the possibility of a series of transfinite infinite numbers. His methods, unorthodox for the time, enabled him to derive theorems that established a mathematical reality for a hierarchy of infinities. Cantor's innovation was opposed, and ignored, by the establishment; years later, the value of his work was recognized and appreciated as a landmark in mathematical thought, forming the beginning of set theory and the foundation for most of contemporary mathematics. As Cantor's sometime collaborator, David Hilbert, remarked, "No one will drive us from the paradise that Cantor has created." This volume offers a guided tour of modern mathematics' Garden of Eden, beginning with perspectives on the finite universe and classes and Aristotelian logic. Author Mary Tiles further examines permutations, combinations, and infinite cardinalities; numbering the continuum; Cantor's transfinite paradise; axiomatic set theory; logical objects and logical types; and independence results and the universe of sets. She concludes with views of the constructs and reality of mathematical structure. Philosophers with only a basic grounding in mathematics, as well as mathematicians who have taken only an introductory course in philosophy, will find an abundance of intriguing topics in this text, which is appropriate for undergraduate-and graduate-level courses.

Classic text combines thermodynamics, statistical mechanics, and kinetic theory in one unified presentation. Topics include equilibrium statistics of special systems, kinetic theory, transport coefficients, and fluctuations. Problems with solutions. 1966 edition.

Intended for use by advanced engineering students and practicing engineers, this volume focuses on the plastic deformation of metals at normal temperatures, as applied to the strength of machines and structures. It covers problems associated with the

special nature of plastic state and important applications of plasticity theory. 1971 edition.