Fetter And Walecka Many Body Solutions

Molecular Collision Theory
Quantum Theory of Finite Systems
Introduction to Many-Body Physics
Green's Functions for Solid State Physicists
Theoretical Mechanics of Particles and Continua
Quantum Many-particle Systems
The Nuclear Many-Body Problem
Quantum Field Theory Ii
A Student's Guide to Lagrangians and Hamiltonians
Many-Body Methods for Atoms, Molecules and Clusters
Extended Density Functionals in Nuclear Structure Physics
Exactly Solvable Models in Many-Body Theory
Excitons and Cooper Pairs
Foundations of Statistical Mechanics
Nonlinear Mechanics
Condensed Matter Field Theory
New Vistas in Nuclear Dynamics
Relativistic Many-Body Theory
Classical Dynamics
Green's Functions and Condensed Matter
Quantum Theory of Many-Particle Systems
Quantum Field Theory for the Gifted Amateur
Basic Aspects of the Quantum Theory of Solids
The Physics of Quantum Fields
Many-body Theory Exposed!
Field Theories in Condensed Matter Physics

Quantum Theory of Many-Body Systems
Introduction to Modern Methods of Quantum Many-body Theory and Their Applications
Photon-Atom Interactions
Many-Particle Physics
A Guide to Feynman Diagrams in the Many-Body Problem
Feynman Diagram Techniques in Condensed Matter Physics
Theoretical Nuclear and Subnuclear Physics
Quantum Many-Body Physics in a Nutshell
Relativistic Many-Body Theory
Many-Body Quantum Theory in Condensed Matter Physics
Methods of Quantum Field Theory in Statistical Physics
Quantum Field Theory of Many-Body Systems
Dirkfest '92 - A Symposium In Honor Of J D Walecka's Sixtieth Birthday

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Molecular Collision Theory World Scientific
This two-part text fills what has often been a void in the first-year graduate physics curriculum. Through its examination of particles and continua, it supplies a lucid and self-contained account of classical mechanics — which in turn provides a natural framework for introducing many of the advanced mathematical concepts in physics. The text opens with Newton's laws of motion and systematically develops the dynamics of classical particles, with chapters on basic principles, rotating coordinate systems, lagrangian formalism, small oscillations, dynamics of rigid bodies, and hamiltonian formalism, including a brief discussion of the transition to quantum mechanics. This part of the book also considers examples of the limiting behavior of many particles, facilitating the eventual transition to a continuous medium. The second part deals with classical continua, including chapters on string membranes, sound waves, surface waves on nonviscous fluids, heat conduction, viscous fluids, and elastic media. Each of these self-contained chapters provides the relevant physical background and develops the appropriate mathematical techniques, and problems of varying difficulty appear throughout the text.

Quantum Theory of Finite Systems Courier Corporation
A modern, graduate-level introduction to many-body physics in condensed matter, this textbook explains the tools and concepts needed for a research-level understanding of the correlated behavior of quantum fluids. Starting with an

operator-based introduction to the quantum field theory of many-body physics, this textbook presents the Feynman diagram approach, Green's functions and finite-temperature many-body physics before developing the path integral approach to interacting systems. Special chapters are devoted to the concepts of Fermi liquid theory, broken symmetry, conduction in disordered systems, superconductivity and the physics of local-moment metals. A strong emphasis on concepts and numerous exercises make this an invaluable course book for graduate students in condensed matter physics. It will also interest students in nuclear, atomic and particle physics.

Introduction to Many-Body Physics Springer Science & Business Media

Intended for graduates in physics and related fields, this is a self-contained treatment of the physics of many-body systems from the point of view of condensed matter. The approach, quite traditionally, covers all the important diagram techniques for normal and superconducting systems, including the zero-temperature perturbation theory, and the Matsubara, Keldysh, and Nambu-Gorov formalisms. The aim is not to be exhaustive, but to present just enough detail to enable students to follow the current research literature or to apply the techniques to new problems. Many of the examples are drawn from mesoscopic physics, which deals with systems small enough that quantum coherence is maintained throughout the volume, and which therefore provides an ideal testing ground for many-body theories. '

Green's Functions for Solid State Physicists Cambridge University Press

index

Theoretical Mechanics of Particles and Continua Springer Science & Business Media

The book reviews several theoretical, mostly exactly solvable, models for selected systems in condensed states of matter, including the solid, liquid, and disordered states, and for systems of few or many bodies, both with boson, fermion, or anyon statistics. Some attention is devoted to models for quantum liquids, including superconductors and superfluids. Open problems in relativistic fields and quantum gravity are also briefly reviewed. The book ranges almost comprehensively, but concisely, across several fields of theoretical physics of matter at various degrees of correlation and at different energy scales, with relevance to molecular, solid-state, and liquid-state physics, as well as to phase transitions, particularly for quantum liquids. Mostly exactly solvable models are presented, with attention also to their numerical approximation and, of course, to their relevance for experiments. Contents:Low-Order Density MatricesSolvable Models for Small Clusters of FermionsSmall Clusters of BosonsAnyon Statistics with ModelsSuperconductivity and SuperfluidityExact Results for an Isolated Impurity in a SolidPair Potential and Many-Body Force Models for LiquidsAnderson Localization in Disordered SystemsStatistical Field Theory: Especially Models of Critical ExponentsRelativistic FieldsTowards Quantum GravityAppendices Readership: Graduate students and researchers in condensed matter theory.

Quantum Many-particle Systems Springer

This book explains the fundamental

concepts and theoretical techniques used to understand the properties of quantum systems having large numbers of degrees of freedom. A number of complimentary approaches are developed, including perturbation theory; nonperturbative approximations based on functional integrals; general arguments based on order parameters, symmetry, and Fermi liquid theory; and stochastic methods.
The Nuclear Many-Body Problem Springer Science & Business Media
Aimed at graduate students and researchers, this book covers the key aspects of the modern quantum theory of solids, including up-to-date ideas such as quantum fluctuations and strong electron correlations. It presents in the main concepts of the modern quantum theory of solids, as well as a general description of the essential theoretical methods required when working with these systems. Diverse topics such as general theory of phase transitions, harmonic and anharmonic lattices, Bose condensation and superfluidity, modern aspects of magnetism including resonating valence bonds, electrons in metals, and strong electron correlations are treated using unifying concepts of order and elementary excitations. The main theoretical tools used to treat these problems are introduced and explained in a simple way, and their applications are demonstrated through concrete examples.
Quantum Field Theory Ii Cambridge University Press
The application of field theoretic techniques to problems in condensed matter physics has generated an array of concepts and mathematical techniques to attack a range of problems such as the theory of quantum phase transitions, the quantum Hall effect, and quantum wires. While concepts such as the renormalization group, topology, and bosonization h
A Student's Guide to Lagrangians and Hamiltonians Springer Science & Business Media
This book provides an introduction to the body of theory shared by several branches of modern optics--nonlinear optics, quantum electronics, laser physics, and quantum optics--with an emphasis on quantum and statistical aspects. It is intended for well prepared undergraduate and graduate students in physics, applied physics, electrical engineering, and chemistry who seek a level of preparation of sufficient maturity to enable them to follow the specialized literature.
Many-Body Methods for Atoms, Molecules and Clusters Oxford University Press
Quantum field theory provides the theoretical backbone to most modern physics. This book is designed to bring quantum field theory to a wider audience of physicists. It is packed with worked examples, witty diagrams, and applications intended to introduce a new audience to this revolutionary theory.
Extended Density Functionals in Nuclear Structure Physics Courier Corporation
Advances in the study of dynamical systems have revolutionized the way that classical mechanics is taught and understood. Classical Dynamics, first published in 1998, is a comprehensive textbook that provides a complete description of this fundamental branch of physics. The authors cover all the material that one would expect to find in a standard graduate course: Lagrangian and Hamiltonian dynamics, canonical transformations, the Hamilton-Jacobi

equation, perturbation methods, and rigid bodies. They also deal with more advanced topics such as the relativistic Kepler problem, Liouville and Darboux theorems, and inverse and chaotic scattering. A key feature of the book is the early introduction of geometric (differential manifold) ideas, as well as detailed treatment of topics in nonlinear dynamics (such as the KAM theorem) and continuum dynamics (including solitons). The book contains many worked examples and over 200 homework exercises. It will be an ideal textbook for graduate students of physics, applied mathematics, theoretical chemistry, and engineering, as well as a useful reference for researchers in these fields. A solutions manual is available exclusively for instructors.
Exactly Solvable Models in Many-Body Theory Courier Corporation
A gentle introduction to the physics of quantized fields and many-body physics. Based on courses taught at the University of Illinois, it concentrates on the basic conceptual issues that many students find difficult, and emphasizes the physical and visualizable aspects of the subject. While the text is intended for students with a wide range of interests, many of the examples are drawn from condensed matter physics because of the tangible character of such systems. The first part of the book uses the Hamiltonian operator language of traditional quantum mechanics to treat simple field theories and related topics, while the Feynman path integral is introduced in the second half where it is seen as indispensable for understanding the connection between renormalization and critical as well as non-perturbative phenomena.
Excitons and Cooper Pairs World Scientific
A concise treatment of variational techniques, focussing on Lagrangian and Hamiltonian systems, ideal for physics, engineering and mathematics students.
Foundations of Statistical Mechanics World Scientific Publishing Company
The experimental and theoretical investigation of nuclei far from the valley of beta-stability is the main subject of modern nuclear structure research. Although the most successful nuclear structure models are purely phenomenological, they nevertheless exploit basic properties of QCD at low energies. This book focuses on the current efforts to bridge the gap between phenomenology and the principles derived from QCD using the extended density functional approach which is based on the successful DFT methods to tackle similarly complex interacting systems in molecular and condensed matter physics. Conceived as a series of pedagogical lectures, this volume addresses researchers in the field as well as postgraduate students and non-specialized scientists from related areas who seek a high-level but accessible introduction to the subject.
Nonlinear Mechanics Springer Science & Business Media
Course of Theoretical Physics, Volume 5: Statistical Physics, Third Edition, Part 1 covers the fundamental principles of statistical physics and thermodynamic quantities. The book discusses the Gibbs and Maxwellian distributions; the Boltzmann distribution for ideal gases; and the Fermi and Bose distributions. Solids are tackled with regard to their application of statistical methods of calculating the thermodynamic quantities. The book describes the deviations of gases from the ideal state, conditions of phase equilibrium, solutions, and chemical

reactions. The text also discusses the properties of matter at very high density; the Gaussian distribution; fluctuations of the fundamental thermodynamic quantities; and fluctuations in solids and ideal gases. The symmetry of crystals; phase transitions of the second kind and critical phenomena; and surfaces are considered as well. Students taking statistical physics and those involved in the areas of statistical physics will find the book invaluable.

Condensed Matter Field Theory World Scientific

This textbook grew out of lecture notes the author used in delivering a quantum field theory (QFT) course for students (both in high energy physics and condensed matter) who already had an initial exposure to the subject.It begins with the path integral method of quantization presented in a systematic and clear-cut manner. Perturbation theory is generalized beyond tree level, to include radiative corrections (loops). Renormalization procedures and the Wilsonian renormalization group (RG flow) are discussed, asymptotic freedom of non-Abelian gauge theories is derived, and some applications in Quantum Chromodynamics (QCD) are considered, with a brief digression into the Standard Model (SM). The SM case requires a study of the spontaneous breaking of gauge symmetry, a phenomenon which would be more appropriate to call 'Higgsing of the gauge bosons.' Other regimes attainable in gauge theories are explained as well. In the condensed matter part, the Heisenberg and Ising model are discussed. The present textbook differs from many others in that it is relatively concise and, at the same time, teaches students to carry out actual calculations which they may encounter in QFT-related applications.

New Vistas in Nuclear Dynamics Courier Corporation

This book is a revised and updated version of the most comprehensive text on nuclear and subnuclear physics, first published in 1995. It maintains the original goal of providing a clear, logical, in-depth, and unifying treatment of modern nuclear theory, ranging from the nonrelativistic many-body problem to the standard model of the strong, electromagnetic, and weak interactions. In addition, new chapters on the theoretical and experimental advances made in nuclear and subnuclear physics in the past decade have been incorporated. Four key topics are emphasized: basic nuclear structure, the relativistic nuclear many-body problem, strong-coupling QCD, and electroweak interactions with nuclei. New chapters have been added on the many-particle shell model, effective field theory, density functional theory, heavy-ion reactions and quark-gluon plasma, neutrinos, and electron scattering. This book is designed to provide graduate students with a basic understanding of modern nuclear and hadronic physics needed to explore the frontiers of the field. Researchers will benefit from the updates on developments and the bibliography.

Relativistic Many-Body Theory Cambridge University Press

This work connects the two famous fields of condensed matter physics, semiconductors and superconductors, through the composite boson nature of their key particles, excitons and Cooper pairs. The goal is to understand through these key particles how composite bosons made of two fermions interact.

Classical Dynamics CRC Press
This book gives a comprehensive account of relativistic many-body perturbation theory, based upon field theory. After some introductory chapters about time-independent and time dependent many-body perturbation theory (MBPT), the standard techniques of S-matrix and Green’s functions are reviewed. Next, the newly introduced covariant-evolution-operator method is described, which can be used, like the S-matrix method, for calculations in quantum electrodynamics (QED). Unlike the S-matrix method, this has a structure that is similar to that of MBPT and therefore can serve as basis for a unified theory. Such an approach is developed in the final chapters, and its equivalence to the Bethe-Salpeter equation is demonstrated. Possible applications are discussed and numerical illustrations given.
Green's Functions and Condensed Matter Cambridge University Press
This high-level monograph offers an analytical treatment of classical scattering by a central force, quantum scattering by a central force, elastic scattering phase shifts, and semi-classical elastic scattering. 1974 edition.