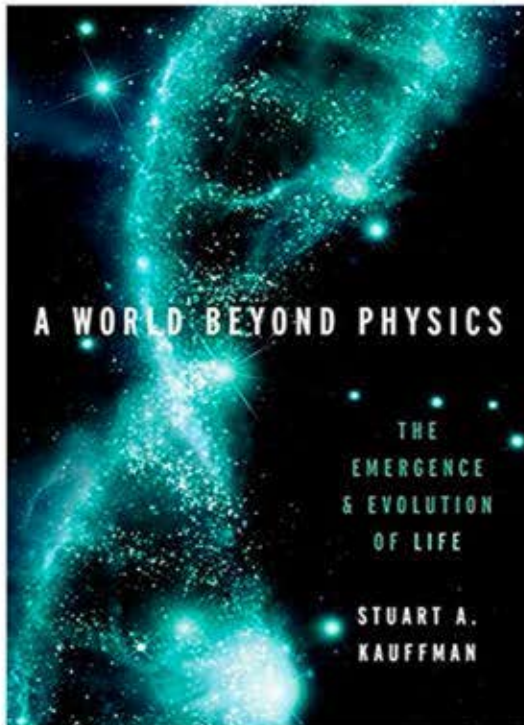




**Boletín de Adquisiciones
Agosto 2022 parte II**

A World Beyond Physics : The Emergence and Evolution of Life
Stuart A. Kauffman

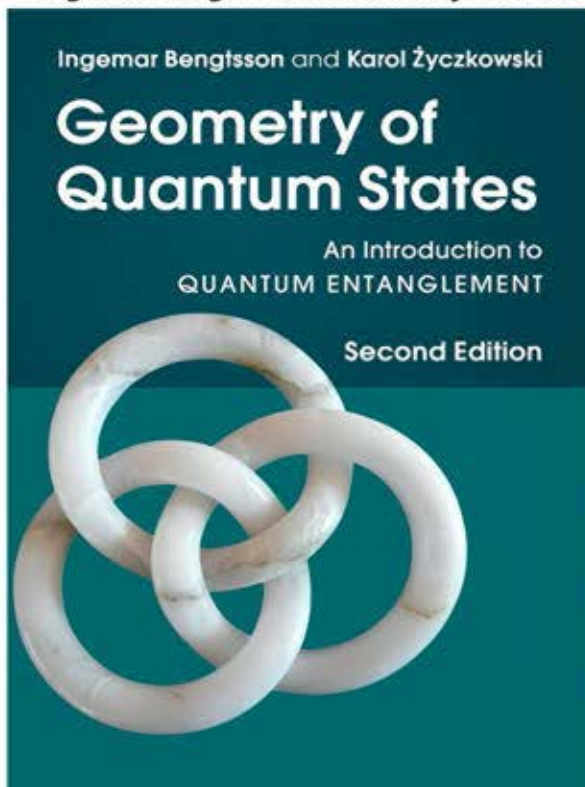


Contents

- 1 The World Is Not a Machine
 - 2 The Function of Function
 - 3 Propagating Organization
 - 4 Demystifying Life
 - 5 How to Make a Metabolism
 - 6 Protocells
 - 7 Heritable Variation
 - 8 The Games We Play
 - 9 The Stage is Set
 - 10 Exaptations and Screwdrivers
 - 11 A World Beyond Physics
- Epilogue: The Evolution of the Economy

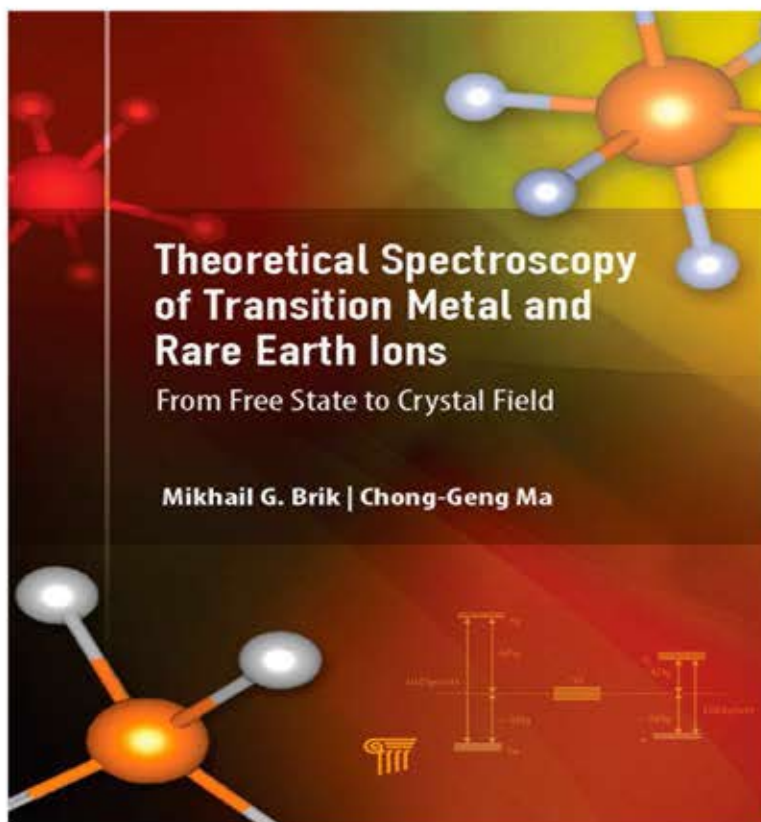
Geometry of Quantum States : An Introduction to Quantum Entanglement
2^a ed.

Ingemar Bengtsson and Karol Życzkowski



Contents

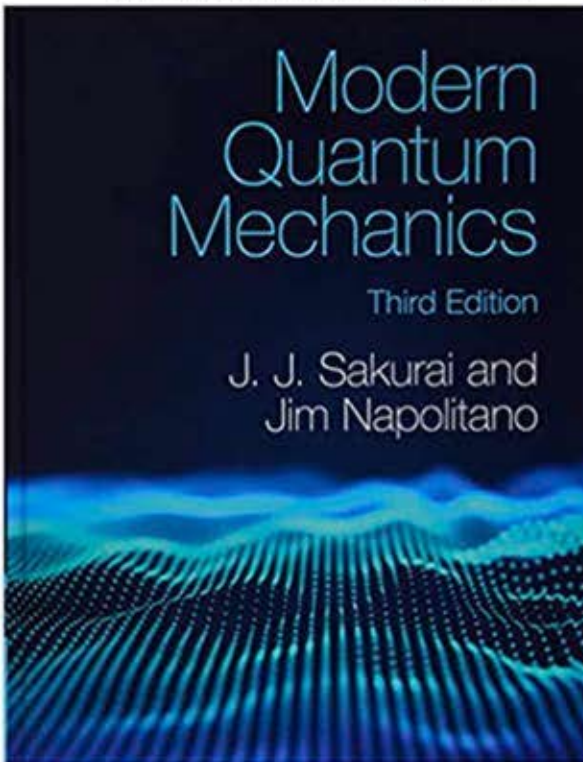
- 1 Convexity, colours and statistics
- 2 Geometry of probability distributions
- 3 Much ado about spheres
- 4 Complex projective spaces
- 5 Outline of quantum mechanics
- 6 Coherent states and group actions
- 7 The stellar representation
- 8 The space of density matrices
- 9 Purification of mixed quantum states
- 10 Quantum operations
- 11 Duality: maps versus states
- 12 Discrete structures in Hilbert space
- 13 Density matrices and entropies
- 14 Distinguishability measures
- 15 Monotone metrics and measures
- 16 Quantum entanglement
- 17 Multiparticle entanglement



Contents

- 1. Fiat lux, or what are the main optical applications of the d and f ions**
- 2. Basic processes of interaction of radiation with matter**
- 3. The theory of atom of hydrogen**
- 4. Multielectron atoms**
- 5. Basic spectroscopic properties of the ions with unfilled d electron shell**
- 6. Basic spectroscopic properties of the ions with unfilled f electron shell**
- 7. The group theory**
- 8. Basic postulates of crystal field theory**
- 9. Electron-vibrational interaction and its manifestation in the experimental absorption and emission spectra of impurity ions in crystals**
- 10. Combination of the first-principles and semi-empirical models for a complete description of the electronic properties of the doped crystals**

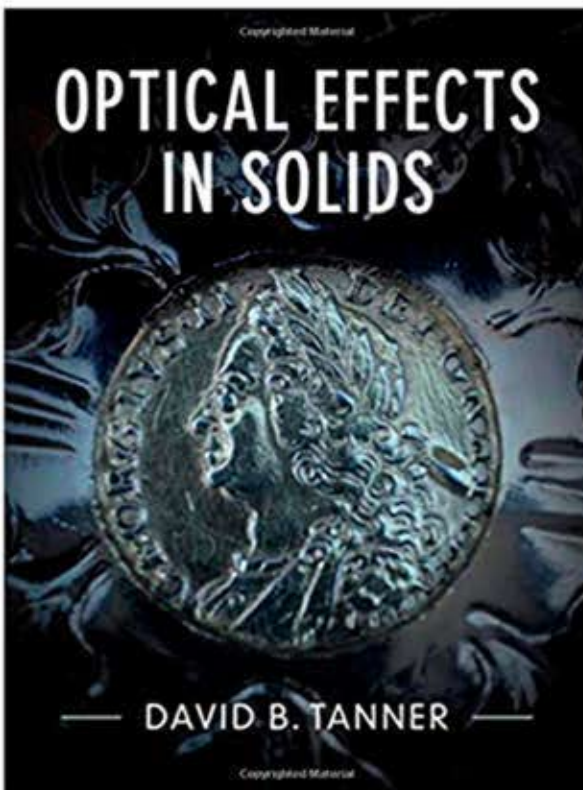
Modern Quantum Mechanics
3^a ed.
J J Sakurai and Jim Napolitano



Contents

- 1 Fundamental Concepts
- 2 Quantum Dynamics
- 3 Theory of Angular Momentum
- 4 Symmetry in Quantum Mechanics
- 5 Approximation Methods
- 6 Scattering Theory
- 7 Identical Particles
- 8 Relativistic Quantum Mechanics

Optical Effects in Solids
David B. Tanner



Contents

- 1 Introduction
- 2 Maxwell's Equations and PlaneWaves in Matter
- 3 The Complex Dielectric Function and Refractive Index
- 4 Classical Theories for the Dielectric Function
- 5 Phonons
- 6 A Look at Real Solids
- 7 Transmission and Reflection
- 8 Free-Electron Metals
- 9 Optical Excitations: Quantum Mechanics
- 10 Kramers-Kronig Relations and SumRules
- 11 Superconductors
- 12 Semiconductors and Insulators
- 13 Strongly Interacting Solids
- 14 Nonlocal Effects
- 15 Anisotropic Crystals
- 16 Magneto-Optics
- 17 Inhomogeneous Materials

Appendix A - Notes about Units

Appendix B - Maxwell's Equations in SI

Appendix C - Partial Derivatives and Vector Operators Acting on Plane Wav

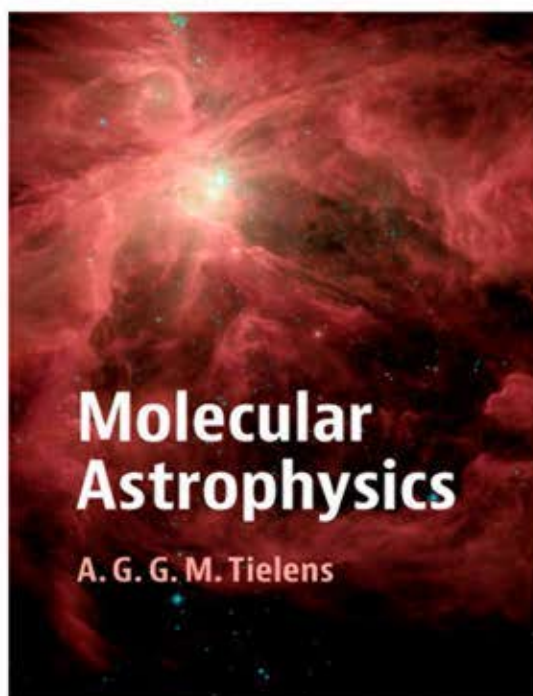
Appendix D - The Wave Equation

Appendix E - Reflection and Transmission at Oblique Incidence

Appendix F - Field Guide to Optical "Constants"

Appendix G - Software

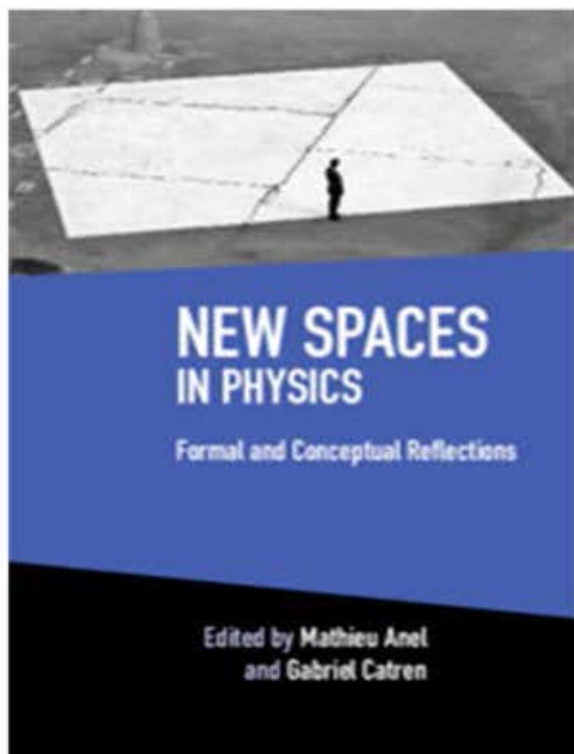
Molecular Astrophysics
A. G. G. M. Tielens



Contents

- 1 Introduction**
- 2 Introduction to Chemistry**
- 3 Molecular Spectroscopy**
- 4 Molecular Emission and Absorption**
- 5 Chemical Thermodynamics**
- 6 Gas Phase Chemical Processes**
- 7 Chemistry on Interstellar Grain Surfaces**
- 8 Physics and Chemistry of Large Molecules**
- 9 Diffuse Clouds**
- 10 Molecular Clouds**
- 11 Star Formation**
- 12 The Aromatic Universe**

New Spaces in Physics : Formal and Conceptual Reflections
Edited by Mathieu Anel and Gabriel Catren



Contents

Introduction

Part I. Noncommutative and supercommutative geometries

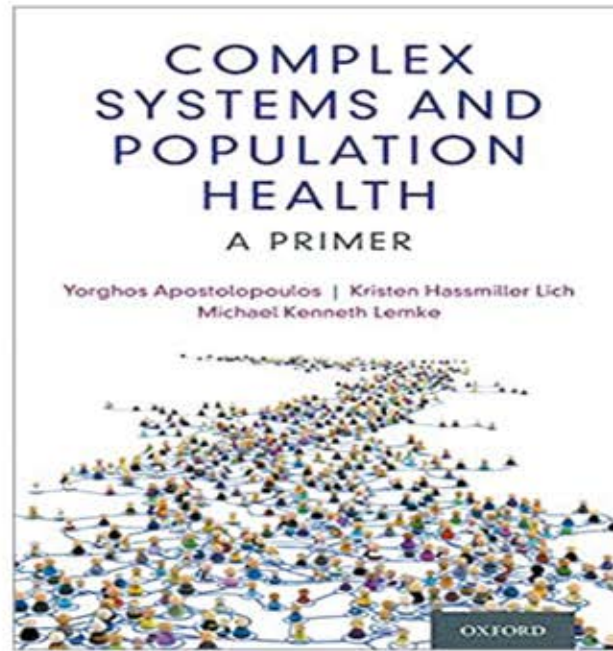
- 1. Noncommutative geometry, the spectral standpoint**
- 2. The logic of quantum mechanics (revisited)**
- 3. Supergeometry in mathematics and physics**

Part II. Symplectic geometry

- 4. Derived stacks in symplectic geometry**
- 5. Higher prequantum geometry**

Part III. Spacetime

- 6. Struggles with the continuum**
- 7. Twistor theory: a geometric perspective for describing the physical world**
- 8. Quantum geometry of space**
- 9. Stringy geometry and emergent space**



CONTENTS

PART I POPULATION HEALTH SCIENCE IN A COMPLEX WORLD

- 1 Bridging the divide: Where complex systems science meets population health science**

PART II COMPLEX SYSTEMS AND THEORY IN POPULATION HEALTH SCIENCE

Introductory Material: Preview and Objectives

- 2 Complex systems in a nutshell: Foundational concepts for population health**
- 3 Population health as a complex adaptive system of systems**
- 4 Complex network dynamics in population health**
- 5 Phase transitions and resilience in physical and psychological health**
- 6 How complex systems science can revolutionize population health theory**

PART III COMPLEX SYSTEMS AND METHODOLOGY IN POPULATION HEALTH SCIENCE

Introductory Material: Preview and Objectives

- 7 Designing population health research grounded in complex systems science**
- 8 Model thinking and formal modeling to improve our mental models in population health research and action**
- 9 Engaging stakeholders in mapping and modeling complex system structure to inform population health research and action**
- 10 Is it time to rethink "normal" in population health research?**

PART IV COMPLEX SYSTEMS AND ANALYTICAL TECHNIQUES IN POPULATION HEALTH SCIENCE

Introductory Material: Preview and Objectives

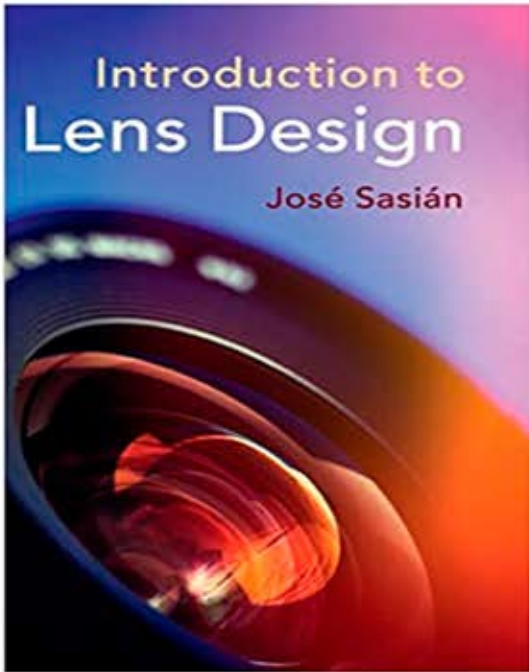
- 11 Mathematical modeling in population health research**
- 12 Computational simulation modeling in population health research and policy**
- 13 System dynamics modeling to rethink health system reform**
- 14 Agent-based modeling to delineate opioid and other drug use epidemics**
- 15 Hybrid simulation modeling in population health**
- 16 Validation of microsimulation models used for population health policy**
- 17 Computational simulation modeling: A tale of five models for health policy analysis**
- 18 Physical sciences for non-physical problems: Understanding and controlling human disease**

PART V TOWARD A NEW POPULATION HEALTH SCIENCE

- 19 Making the global complexity turn in population health**

Harnessing complex systems: An emerging paradigm for a new population health science

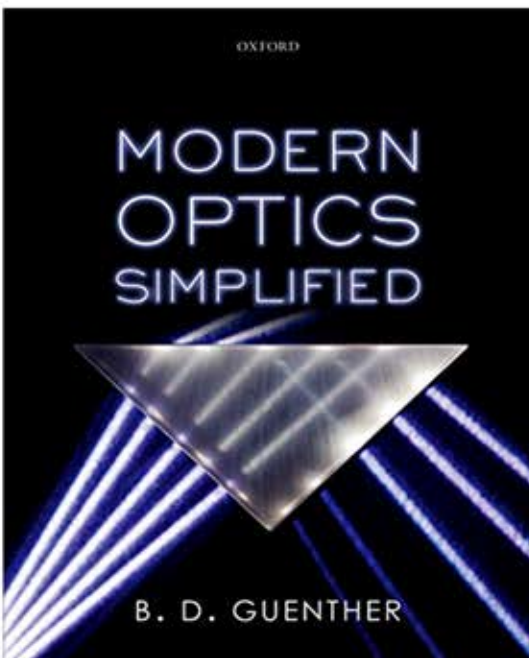
Introduction to Lens Design
José Sasián



Contents

- 1 Introduction**
- 2 Classical Imaging, First-Order Imaging, and Imaging Aberrations**
- 3 Aspheric Surfaces**
- 4 Thin Lenses**
- 5 Ray Tracing**
- 6 Radiometry in a Lens System**
- 7 Achromatic and Athermal Lenses**
- 8 Combinations of Achromatic Doublets**
- 9 Image Evaluation**
- 10 Lens Tolerancing**
- 11 Using Lens Design Software**
- 12 Petzval Portrait Objective, Cooke Triplet, and Double Gauss Lens**
- 13 Lens System Combinations**
- 14 Ghost Image Analysis**
- 15 Designing with Off-the-Shelf Lenses**
- 16 Mirror Systems**
- 17 Miniature Lenses**
- 18 Zoom Lenses**

Modern Optics Simplified
B. D. Guenther

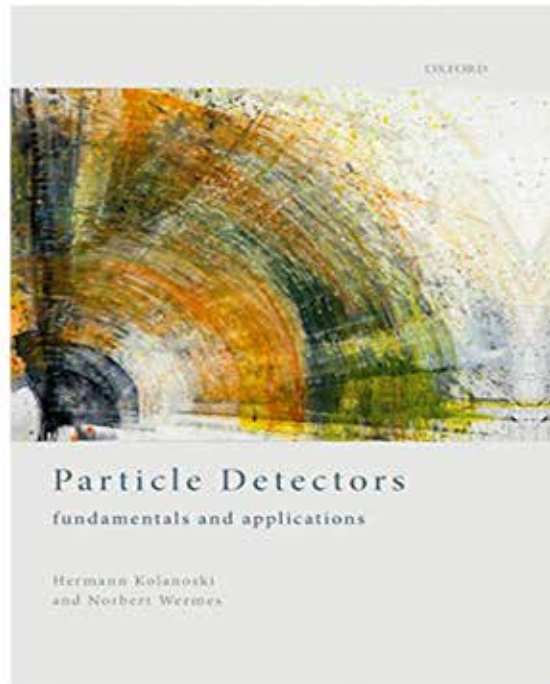


Contents

Introduction

- 1 Waves**
- 2 Electromagnetic Theory**
- 3 Reflection and Refraction**
- 4 Interference and Coherence**
- 5 Polarizers**
- 6 Geometrical Optics**
- 7 Aberrations**
- 8 Guided Waves**
- 9 Fraunhofer Diffraction**
- 10 Fresnel Diffraction**
- 11 Imaging**

Particle Detectors: Fundamentals and Applications
Hermann Kolanoski, and Norbert Wermes

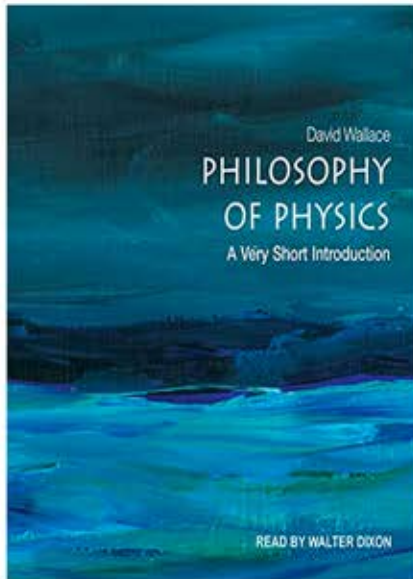


Contents

- 1 Introduction**
- 2 Overview, history and concepts**
- 3 Interactions of particles with matter**
- 4 Movement of charge carriers in electric and magnetic**
- 5 Signal formation by moving charges**
- 6 Non-electronic detectors**
- 7 Gas-filled detectors**
- 8 Semiconductor detectors**
- 9 Track reconstruction and momentum measurement**
- 10 Photodetectors**
- 11 Cherenkov detectors**
- 12 Transition radiation detectors**
- 13 Scintillation detectors**
- 14 Particle identification**
- 15 Calorimeters**
- 16 Detectors for cosmic particles, neutrinos and exotic matter**
- 17 Signal processing, readout and noise**
- 18 Trigger and data acquisition systems**

- Appendix A Dosimetry and radioactive sources**
- Appendix B Weighting potential of segmented electrodes**
- Appendix C Diffusion effects in drift chambers**
- Appendix D Ionisation statistics in drift chambers**
- Appendix E Position resolution of structured electrodes**
- Appendix F Fitting of track models**
- Appendix G LPM effect**
- Appendix H Laplace transform**
- Appendix I Physical noise sources**
- Bibliography**

Philosophy of Physics: A Very Short Introduction
David Wallace



Contents

Introduction

- 1 The methods and fruits of science**
- 2 Motion and inertia**
- 3 Relativity and its philosophy**
- 4 Reduction and irreversibility**
- 5 Mysteries of the quantum**
- 6 Interpreting the quantum**

Lecture Notes of the Les Houches Summer School: volumen 106, 4-29 July 2016

Current Trends in Atomic Physics

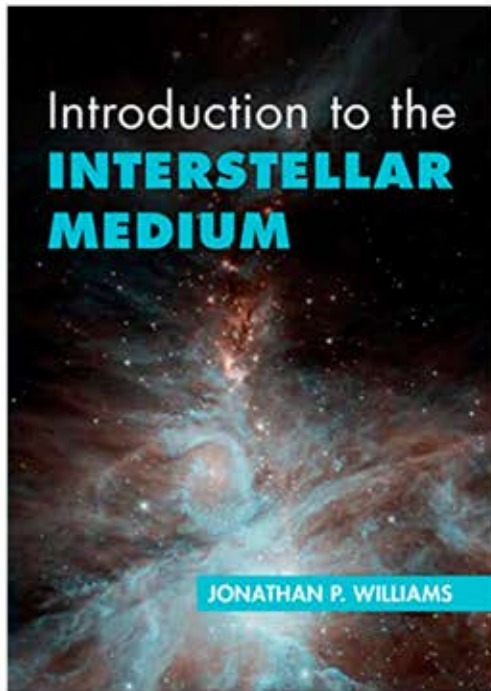
Edited by: Antoine Browaeys ,Thierry Lahaye , Trey Porto , Charles S. Adams ,Matthias Weidemüller and Leticia F. Cugliandolo



Contents

- 1 Quantum optics with diamond color centers coupled to nanophotonic devices**
- 2 Searches for new, massive particles with AMO experiments**
- 3 Molecular-physics aspects of cold chemistry**
- 4 Frequency combs and precision spectroscopy of atomic hydrogen**
- 5 Collective effects in quantum systems**
- 6 Macroscopic scale atom interferometers: introduction, techniques, and applications**
- 7 Quantum jumps, Born's rule, and objective classical reality via quantum Darwinism**
- 8 Generation of high-order harmonics and attosecond pulses**
- 9 Ultrafast electron dynamics as a route to explore chemical processes**
- 10 Matter-wave physics with nanoparticles and biomolecules**
- 11 Schrödinger cat states in circuit QED**
- 12 Hanbury Brown and Twiss, Hong Ou and Mandel effects and other landmarks in quantum optics: from photons to atoms**

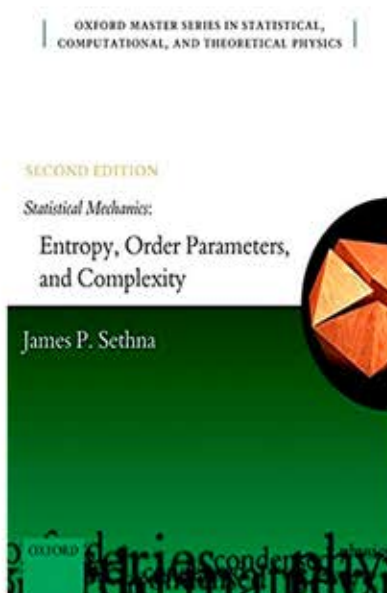
Introduction to the Interstellar Medium
Jonathan P. Williams



Contents

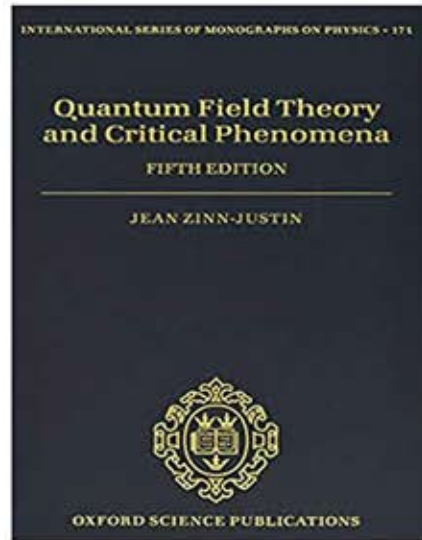
- 1 Introduction
- 2 Observations
- 3 Essential Background Physics
- 4 Dust
- 5 Atomic Regions
- 6 Ionized Regions
- 7 Molecular Regions
- 8 Dynamics
- 9 Star Formation
- 10 The ISM on the Galactic Scale
- 11 The ISM in Other Galaxies and Beyond

Statistical Mechanics: Entropy, Order Parameters, and Complexity
Second Edition
James P. Sethna



Contents

- 1 What is statistical mechanics?
- 2 Random walks and emergent properties
- 3 Temperature and equilibrium
- 4 Phase-space dynamics and ergodicity
- 5 Entropy
- 6 Free energies
- 7 Quantum statistical mechanics
- 8 Calculation and computation
- 9 Order parameters, broken symmetry, and topology
- 10 Correlations, response, and dissipation
- 11 Abrupt phase transitions
- 12 Continuous phase transitions

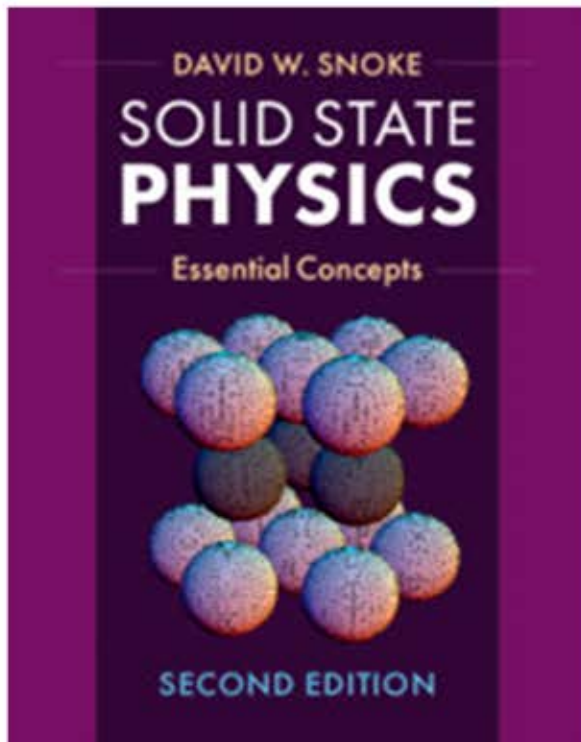


Contents

- 1. Gaussian integrals. Algebraic preliminaries**
- 2. Euclidean path integrals and quantum mechanics (QM)**
- 3. Quantum mechanics (QM): Path integrals in phase space**
- 4. Quantum statistical physics: Functional integration formalism**
- 5. Quantum evolution: From particles to fields**
- 6. The neutral relativistic scalar field**
- 7. Perturbative quantum field theory (QFT): Algebraic methods**
- 8. Ultraviolet divergences: Effective quantum field theory (EFT)**
- 9. Introduction to renormalization theory and renormalization group (RG)**
- 10. Dimensional continuation, regularization. minimal subtraction (MS) , Renormalization group (RG) functions**
- 11. Renormalization of local polynomials. Short distance expansion (SDE)**
- 12. Relativistic fermions: Introduction**
- 13. Symmetries, chiral symmetry breaking and renormalization**
- 14. Critical phenomena: General considerations. Mean-field theory (MFT)**
- 15. The renormalization group approach (RG): The critical theory near dimensions**
- 16. Critical domain: Universality, ϵ -expansion**
- 17. Critical phenomena: Corrections to scaling behaviour**
- 18. $O(N)$ -symmetric vector models for N large**
- 19. The non-linear σ -model near two dimensions: Phase structure**
- 20. Gross–Neveu–Yukawa and Gross–Neveu models**
- 21. Abelian gauge theories: The framework of quantum electrodynamics (QED)**
- 22. Non-Abelian gauge theories: Introduction**
- 23. The Standard Model (SM) of fundamental interactions**
- 24. Large momentum behaviour in quantum field theory (QFT)**
- 25. Lattice gauge theories: Introduction**
- 26. Becchi–Rouet–Stora–Tyutin (BRST) symmetry, Gauge theories: Zinn-Justin equation (ZJ) and renormalization**
- 27. Supersymmetric quantum field theory (QFT): Introduction**
- 28. Elements of classical and quantum gravity**
- 29. Generalized non-linear σ -models in two dimensions**

30. A few two-dimensional solvable quantum field theories (QFT)
31. $O(2)$ spin model and Kosterlitz–Thouless's (KT) phase transition
32. Finite-size effects in field theory. Scaling behaviour
33. Quantum field theory (QFT) at finite temperature: Equilibrium properties
34. Stochastic differential equations: Langevin, Fokker–Planck (FP) equations
35. Langevin field equations, properties and renormalization
36. Critical dynamics and renormalization group (RG)
37. Instantons in quantum mechanics (QM)
38. Metastable vacua in quantum field theory (QFT)
39. Degenerate classical minima and instantons
40. Perturbative expansion at large orders
41. Critical exponents and equation of state from series summation
42. Multi-instantons in quantum mechanics (QM)

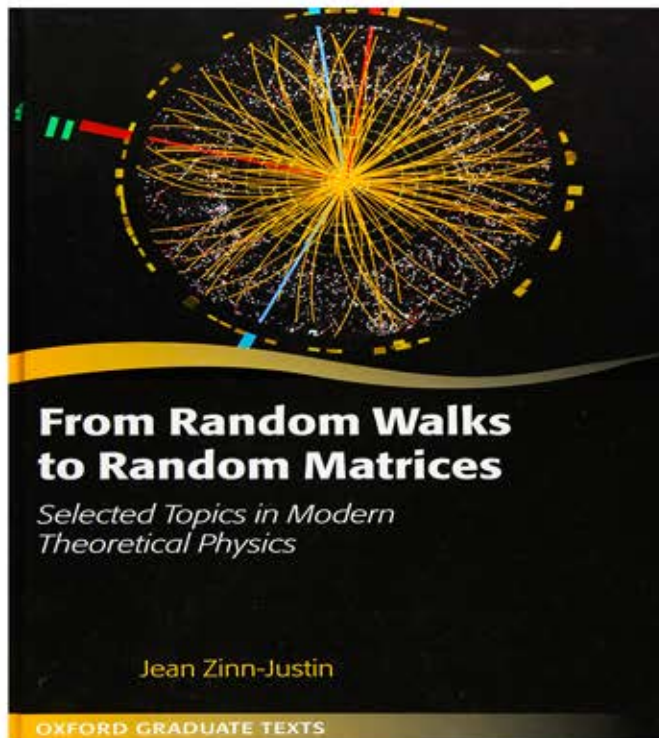
Solid State Physics : Essential Concepts
2nd Edition
David W. Snoke



Contents

1. Electron bands
2. Electronic quasiparticles
3. Classical waves in anisotropic media
4. Quantized waves
5. Interactions of quasiparticles
6. Group theory
7. The complex susceptibility
8. Many-body perturbation theory
9. Coherence and correlation
10. Spin and magnetic systems
11. Spontaneous coherence in matter

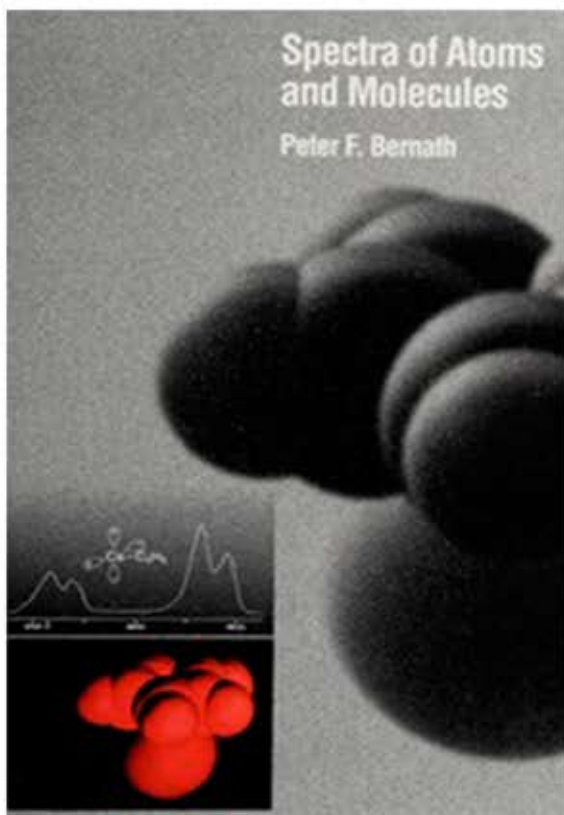
Appendix A. Review of bra-ket notation
 Appendix B. Review of Fourier series and Fourier transforms
 Appendix C. Delta-function identities
 Appendix D. Quantum single harmonic oscillator
 Appendix E. Second-order perturbation theory
 Appendix F. Relativistic derivation of spin physics.



Contents

1. The random walk: Universality and continuum limit
2. Functional integration: From path to field integrals
3. The essential role of functional integrals in modern physics
4. From infinities in QED to the general Renormalization Group
5. Renormalization Group: From a general concept to numbers
6. Critical phenomena: The field theory approach
7. Stability of RG fixed points and decay of correlations
8. Quantum field theory: An effective theory
9. The non-perturbative renormalization group
10. $O(N)$ vector model in the ordered phase: Goldstone modes
11. Gauge invariance and gauge fixing
12. The discovery of the Higgs boson: A major achievement and a problem
13. Quantum Chromodynamics (QCD): A non-Abelian gauge theory
14. Non-Abelian gauge theories: Renormalization and Zinn-Justin equation
15. Quantum field theory: Asymptotic safety
16. Symmetries: From classical to quantum field theories
17. Quantum anomalies: A few physics applications
18. Periodic semi-classical vacuum, instantons and anomalies
19. Field theory in a finite geometry: Finite size scaling
20. The weakly interacting Bose gas at the critical temperature
21. Quantum field theory at finite temperature
22. From random walk to critical dynamics
23. Field theory: Perturbative expansion and summation methods
24. Hyper-asymptotic expansions and instantons
25. Renormalization group approach to matrix models

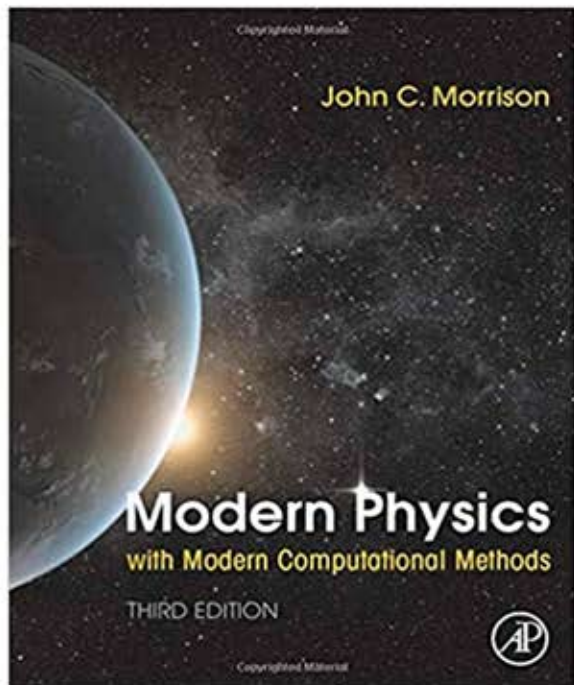
Spectra of Atoms and Molecules
Fourth Edition
Peter F. Bernath



Contents

- 1 Introduction
- 2 Molecular Symmetry
- 3 Matrix Representation of Groups
- 4 Quantum Mechanics and Group Theory
- 5 Atomic Spectroscopy
- 6 Rotational Spectroscopy
- 7 Vibrational Spectroscopy
- 8 Light Scattering and the Raman Effect
- 9 Electronic Spectroscopy of Diatomics
- 10 Electronic Spectroscopy of Polyatomics
- 11 Atmospheric Spectroscopy
- 12 Astronomical Spectroscopy

Modern Physics : with Modern Computational Methods f
or Scientists and Engineers 3rd Edition
John C. Morrison



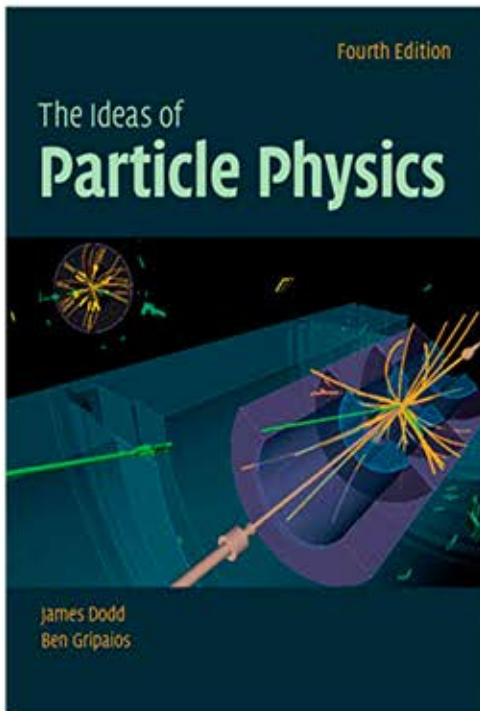
Contents

1. The Wave-Particle Duality
2. The Schrödinger Wave Equation
3. Operators and Waves
4. The Hydrogen Atom
5. Many-Electron Atoms
6. The Emergence of Masers and Lasers
7. Diatomic Molecules
8. Statistical Physics
9. Electronic Structure of Solids
10. Charge Carriers in Semiconductors
11. Semiconductor Lasers
12. The Special Theory of Relativity
13. The Relativistic Wave Equations and General Relativity
14. Particle Physics
15. Nuclear Physics

The Ideas of Particle Physics

4th Edition

James E. Dodd, and Ben Gripaios



Contents

Part I. Introduction

- 1. Matter and light**
- 2. Special relativity**
- 3. Quantum mechanics**
- 4. Relativistic quantum theory**

Part II. Basic Particle Physics

- 5. The fundamental forces**
- 6. Symmetry in the microworld**
- 7. Mesons**
- 8. Strange particles**

Part III. Strong Interaction Physics

- 9. Resonance particles**
- 10. SU(3) and quarks**

Part IV. Weak Interaction Physics I

- 11. The violation of parity**
- 12. Fermi's theory of the weak interactions**
- 13. Two neutrinos**
- 14. Neutral kaons and CP violation**

Part V. Weak Interaction Physics II

- 15. The current-current theory of the weak interactions**
- 16. An example leptonic process: electron-neutrino scattering**
- 17. The weak interactions of hadrons**
- 18. The W boson**

Part VI. Gauge Theory of the Weak Interactions

- 19. Motivation for the theory**
- 20. Gauge theory**
- 21. Spontaneous symmetry breaking**
- 22. The Glashow–Weinberg–Salam model**
- 23. Consequences of the model**
- 24. The hunt for the W^\pm , Z^0 bosons**

Part VII. Deep Inelastic Scattering

- 25. Deep inelastic processes**
- 26. Electron-nucleon scattering**
- 27. The deep inelastic microscope**
- 28. Neutrino-nucleon scattering**
- 29. The quark model of the structure functions**

Part VIII. Quantum Chromodynamics – The Theory of Quarks

- 30. Coloured quarks**
- 31. Colour gauge theory**
- 32. Asymptotic freedom**
- 33. Quark confinement**

Part IX. Electron-Positron Collisions

- 34. Probing the vacuum**
- 35. Quarks and charm**
- 36. Another generation**

Part X. The Standard Model

37. The model in summary

38. Precision tests of the model

39. Flavour Mixing and CP violation

40. The Large Hadron Collider

41. Discovery and properties of the Higgs boson

Part XI. Beyond the Standard Model

42. Reasons to go beyond

43. Neutrino masses and mixing

44. Grand unification

45. Supersymmetry

46. Composite Higgs models

47. Axions and the Strong CP problem

Part XII. Particle Physics and Cosmology

48. The big bang and inflation

49. The cosmic microwave background

50. The matter-anti-matter asymmetry

51. Dark matter

52. Dark energy

Part XIII. Gravity and Gravitational Waves

53. From general relativity to gravitational waves

54. The discovery of gravitational waves

55. Gravitational wave and multi-messenger astronomy

56. The future: Super Ligo and LISA

Part XIV. String Theory

57. Origins – the hadronic string

58. String theory to M-theory

59. The AdS-CFT correspondence

60. Consequences of the theory

Part XV. The Future – To Boldly Go!

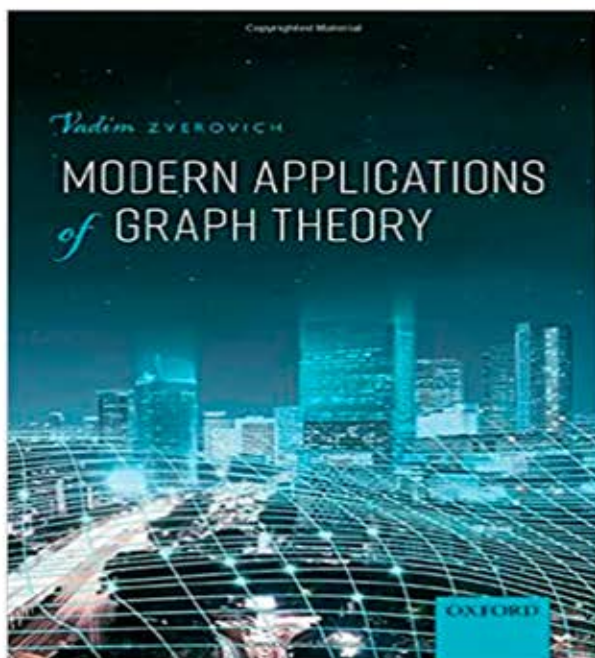
61. Accelerators, observatories and other experiments

62. Known unknowns

63. Glittering prizes

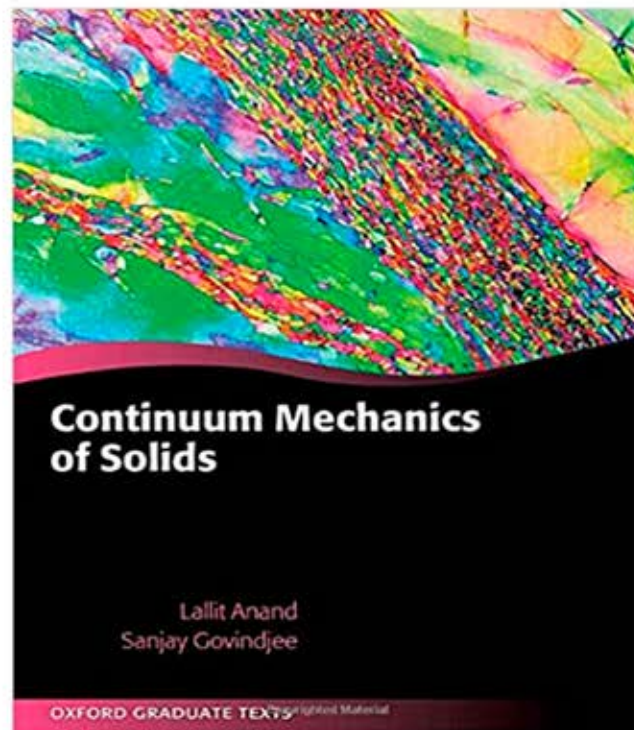
64. Unknown unknowns: it must be beautiful

Modern Applications of Graph Theory
Vadim Zverovich



Contents

- 1. Introduction**
- 2. Traffic Networks: Wardrop Equilibrium and Braess' Paradox**
- 3. Emergency Response: Navigable Networks and Optimal Routing in Hazardous Indoor Environments**
- 4. Graph Models for Backbone Sets and Limited Packings in Networks**
- 5. Graph Models for Optimization Problems in Road Networks**
- 6. Graphs in Molecular Epidemiology**



Contents

I Vectors and Tensors

- 1 Vectors and tensors: Algebra**
- 2 Vectors and tensors: Analysis**

II Kinematics

- 3 Kinematics**

III Balance laws

- 4 Balance laws for mass, forces, and moments**
- 5 Balance of energy and entropy imbalance**
- 6 Balance laws for small deformations**

IV Linear elasticity

- 7 Constitutive equations for linear elasticity**
- 8 Linear elastostatics**
- 9 Solutions to some classical problems in linear elastostatics**

V Variational formulations

- 10 Variational formulation of boundary-value problems**
- 11 Introduction to the finite element method for linear elastostatics**
- 12 Principles of minimum potential energy and complementary energy**

VI Elastodynamics. Sinusoidal progressive waves

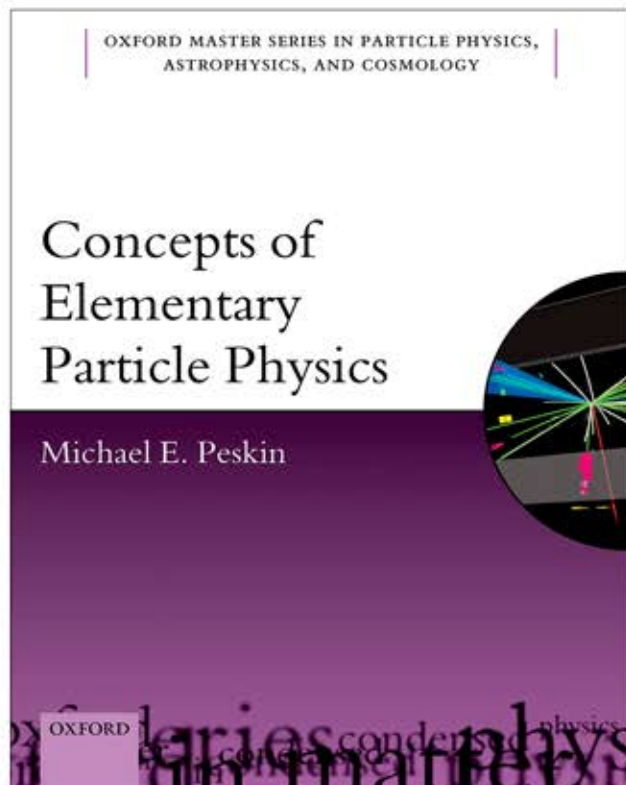
- 13 Elastodynamics. Sinusoidal progressive waves**

VII Coupled theories

- 14 Linear thermoelasticity**
- 15 Small deformation theory of species diffusion coupled to elasticity**
- 16 Linear poroelasticity**
- 17 A small deformation chemoelasticity theory for energy storage materials**

- 18 Linear piezoelectricity
- VIII Limits to elastic response. Yielding and plasticity
- 19 Limits to elastic response. Yielding and failure
- 20 One-dimensional plasticity
- 21 Three-dimensional plasticity with isotropic hardening
- 22 Three-dimensional plasticity with kinematic and isotropic hardening
- 23 Small deformation rate-independent plasticity based on a postulate of maximum dissipation
- 24 Some classical problems in rate-independent plasticity
- 25 Rigid-perfectly-plastic materials. Two extremal principles
- IX Fracture and fatigue
- 26 Linear elastic fracture mechanics
- 27 Energy-based approach to fracture
- 28 Fatigue
- X Linear viscoelasticity
- 29 Linear viscoelasticity
- XI Finite elasticity
- 30 Finite elasticity
- 31 Finite elasticity of elastomeric materials

Concepts of Elementary Particle Physics
Michael E. Peskin



Contents

I Preliminaries and Tools

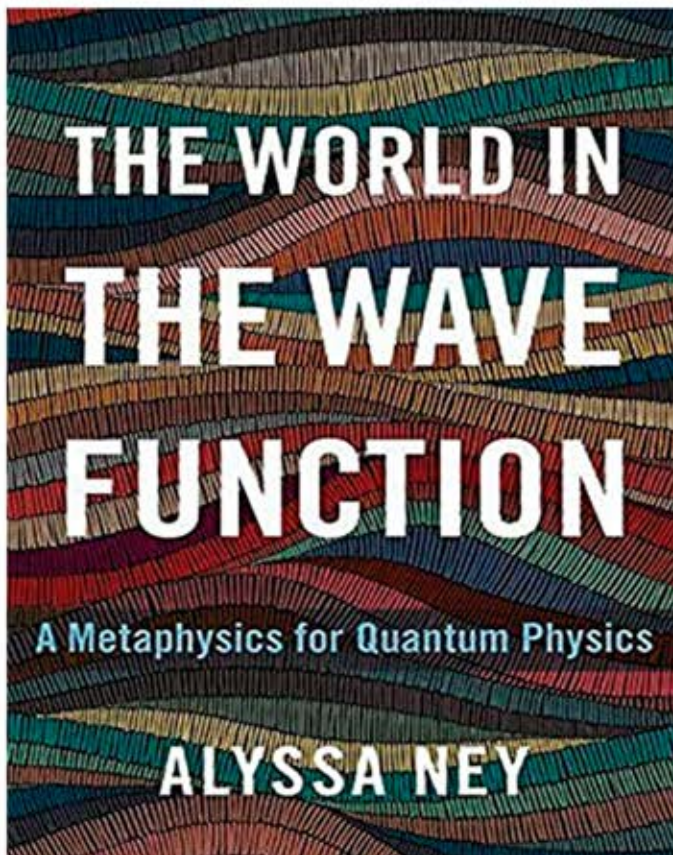
- 1. Introduction
- 2. Symmetries of Space-Time
- 3. Relativistic Wave Equations
- 4. The Hydrogen Atom and Positronium
- 5. The Quark Model
- 6. Detectors of Elementary Particles
- 7. Tools for Calculation

II The Strong Interaction

- 8. Electron-Positron Annihilation
- 9. Deep Inelastic Electron Scattering
- 10. The Gluon
- 11. Quantum Chromodynamics
- 12. Partons and Jets
- 13. QCD at Hadron Colliders
- 14. Chiral Symmetry

III The Weak Interaction

- 15. The Current-Current Model of the Weak Interaction
- 16. Gauge Theories with Spontaneous Symmetry Breaking
- 17. The W and Z Bosons
- 18. Quark Mixing Angles and Weak Decays
- 19. CP Violation
- 20. Neutrino Masses and Mixings
- 21. The Higgs Boson
- 22. Epilogue



Contents

- 1 A Preliminary Case for Wave Function Realism**
- 2 The Argument from Entanglement**
- 3 The Virtues of Separability and Locality**
- 4 Wave Function Realism in a Relativistic Setting**
- 5 Must an Ontology for Quantum Theories Contain Local Beables?**
- 6 The Causal Role of Macroscopic Objects**
- 7 A Solution to the Macro-Object Problem**