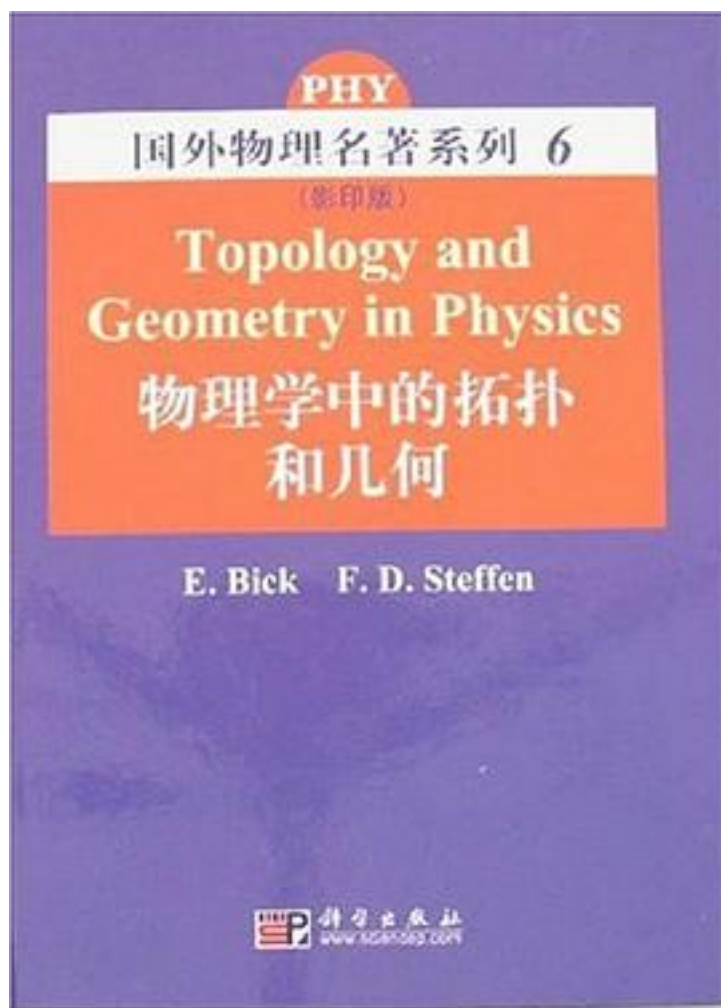


物理学中的拓扑和几何



[物理学中的拓扑和几何_下载链接1](#)

著者:E.Bick, F.D.Stef

出版者:科学

出版时间:2007-4

装帧:

isbn:9787030187864

《物理学中的拓扑和几何(影印版)》主要包括：拓扑和几何的概念与方法在物理学

中的应用有助于加深人们对物理学的许多重要领域(如凝聚态物理、宇宙学、引力和粒子物理)的理解,《物理学中的拓扑和几何(影印版)》是一本关于几何和拓扑在这些领域中的应用与发展的高级教材,书中分章节相对独立地介绍了规范理论、BRST量子化、手性异常、超对称孤子和非交换几何中的拓扑概念。《物理学中的拓扑和几何(影印版)》适用于相关专业的研究生、对本领域感兴趣的读者以及讲授相关课程的教师。

作者介绍:

目录: Introduction and Overview
E.Bick, F.D.Steffen
1、Topology and Geometry in Physics
2、An Outline of the Book
3、Complementary Literature
Topological Concepts in Gauge Theories
F.Lenz
1、Introduction
2、Nielsen-Olesen Vortex
2.1 Abelian Higgs Model
2.2 Topological Excitations
3、Homotopy
3.1 The Fundamental Group
3.2 Higher Homotopy Groups
3.3 Quotient Spaces
3.4 Degree of Maps
3.5 Topological Groups
3.6 Transformation Groups
3.7 Defects in Ordered Media
4、Yang-Mills Theory
5、't Hooft-Polyakov Monopole
5.1 Non-Abelian Higgs Model
5.2 The Higgs Phase
5.3 Topological Excitations
6、Quantization of Yang-Mills Theory
7、Instantons
7.1 Vacuum Degeneracy
7.2 Tunneling
7.3 Fermions in Topologically Non-trivial Gauge Fields
7.4 Instanton Gas
7.5 Topological Charge and Link Invariants
8、Center Symmetry and Confinement
8.1 Gauge Fields at Finite Temperature and Finite Extension
8.2 Residual Gauge Symmetries in QED
8.3 Center Symmetry in SU(2) Yang-Mills Theory
8.4 Center Vortices
8.5 The Spectrum of the SU(2) Yang-Mills Theory
9、QCD in Axial Gauge
9.1 Gauge Fixing
9.2 Perturbation Theory in the Center-Symmetric Phase
9.3 Polyakov Loops in the Plasma Phase
9.4 Monopoles
9.5 Monopoles and Instantons
9.6 Elements of Monopole Dynamics
9.7 Monopoles in Diagonalization Gauges
10、Conclusions
Aspects of BRST Quantization
J.W.van Holten
1、Symmetries and Constraints
1.1 Dynamical Systems with Constraints
1.2 Symmetries and Noether's Theorems
1.3 Canonical Formalism
1.4 Quantum Dynamics
1.5 The Relativistic Particle
1.6 The Electro-magnetic Field
1.7 Yang-Mills Theory
1.8 The Relativistic String
2、Canonical BRST Construction
2.1 Grassmann Variables
2.2 Classical BRST Transformations
2.3 Examples
2.4 Quantum BRST Cohomology
2.5 BRST-Hodge Decomposition of States
2.6 BRST Operator Cohomology
2.7 Lie-Algebra Cohomology
3、Action Formalism
3.1 BRST Invariance from Hamilton's Principle
3.2 Examples
3.3 Lagrangean BRST Formalism
3.4 The Master Equation
3.5 Path-Integral Quantization
4、Applications of BRST Methods
4.1 BRST Field Theory
4.2 Anomalies and BRST Cohomology
Appendix. Conventions
Chiral Anomalies and Topology
J.Zinn-Justin
1、Symmetries, Regularization, Anomalies
2、Momentum Cut-Off Regularization
2.1 Matter Fields: Propagator Modification
2.2 Regulator Fields
2.3 Abelian Gauge Theory
2.4 Non-Abelian Gauge Theories
3、Other Regularization Schemes
3.1 Dimensional Regularization
3.2 Lattice Regularization
3.3 Boson Field Theories
3.4 Fermions and the Doubling Problem
4、The Abelian Anomaly
4.1 Abelian Axial Current and Abelian Vector Gauge Fields
4.2 Explicit Calculation
4.3 Two Dimensions
4.4 Non-Abelian Vector Gauge Fields and Abelian Axial Current
4.5 Anomaly and Eigenvalues of the Dirac Operator
5、Instantons, Anomalies, and θ -Vacua
5.1 The Periodic Cosine Potential
5.2 Instantons and Anomaly: CP(N-1) Models
5.3 Instantons and Anomaly: Non-Abelian Gauge Theories
5.4 Fermions in an Instanton Background
6、Non-Abelian Anomaly
6.1 General Axial Current
6.2 Obstruction to Gauge Invariance
6.3 Wess-Zumino Consistency Conditions
7、Lattice Fermions: Ginsparg-Wilson Relation
7.1 Chiral Symmetry and Index
7.2 Explicit Construction: Overlap Fermions
8、Supersymmetric Quantum Mechanics and Domain Wall Fermions
8.1 Supersymmetric Quantum Mechanics
8.2 Field Theory in Two Dimensions
8.3 Domain Wall Fermions
Appendix A. Trace Formula for Periodic Potentials
Appendix B. Resolvent of the Hamiltonian in Supersymmetric

QMSupersymmetric Solitons and TopologyM.Shifman1、 Introduction2、 $D=1+1; N=1$
 2.1 Critical(BPS) Kinks 2.2 The Kink Mass (Classical) 2.3 Interpretation of the BPS
 Equations.Morse Theory 2.4 Quantization.Zero Modes:Bosonic and Fermionic 2.5
 Cancellation of Nonzero Modes 2.6 Anomaly I 2.7 Anomaly II (Shortening
 Supermultiplet Down to One State)3、 Domain Walls in (3+1)-Dimensional Theories 3.1
 Superspace and Superfields 3.2 Wess Zumino Models 3.3 Critical Domain Walls 3.4
 Finding the Solution to the BPS Equation 3.5 Does the BPS Equation Follow from the
 Second Order Equation of Motion? 3.6 Living on a Wall4、 Extended Supersymmetry in
 Two Dimensions:The Supersymmetric CP(1) Model 4.1 Twisted Mass 4.2 BPS Solitons
 at the Classical Level 4.3 Quantization of the Bosonic Moduli 4.4 The Soliton Mass and
 Holomorphy 4.5 Switching On Fermions 4.6 Combining Bosonic and Fermionic
 Moduli5、 ConclusionsAppendix A. CP(1) Model=O(3) Model ($A_f=1$ Superfields
 N)Appendix B. Getting Started (Supersymmetry for Beginners) B.1 Promises of
 Supersymmetry B.2 Cosmological Term B.3 Hierarchy ProblemForces from Connes'
 GeometryT.Schiicker1、 Introduction2、 Gravity from Riemannian Geometry 2.1 First
 Stroke:Kinematics 2.2 Second Stroke:Dynamics3、 Slot Machines and the Standard
 Model 3.1 Input 3.2 Rules 3.3 The Winner 3.4 Wick Rotation4、 Connes'
 Noncommutative Geometry 4.1 Motivation:Quantum Mechanics 4.2 The Calibrating
 Example:Riemannian Spin Geometry 4.3 Spin Groups5、 The Spectral Action 5.1
 Repeating Einstein's Derivation in the Commutative Case 5.2 Almost Commutative
 Geometry 5.3 The Minimax Example 5.4 A Central Extension6、 Connes' Do-It-Yourself
 Kit 6.1 Input 6.2 Output 6.3 The Standard Model 6.4 Beyond the Standard
 Model7、 Outlook and ConclusionAppendix A.1 Groups A.2 Group Representations A.3
 Semi-Direct Product and Poincare Group A.4 AlgebrasIndex
 ([收起](#))

[物理学中的拓扑和几何_下载链接1_](#)

标签

数学

物理

拓扑

数学物理7

拓扑学

科学

物理学

虾米是拓扑内？？ ~~

评论

[物理学中的拓扑和几何_下载链接1](#)

书评

[物理学中的拓扑和几何_下载链接1](#)