

<<群论和物理学>>

图书基本信息

书名：<<群论和物理学>>

13位ISBN编号：9787506249652

10位ISBN编号：7506249650

出版时间：2000-4

出版时间：世界图书出版公司(此信息作废)

作者：S.Sternberg

页数：429

版权说明：本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问：<http://www.tushu007.com>

内容概要

Group theory is one of the great achievements of 19th century mathematics. It emerged as a unifying idea drawing on four different sources: number theory, the theory of equations, geometry, and crystallography. The early motivation from number theory stemmed from the work of Euler, Legendre and Gauss on power residues. In the theory of equations, the study of various permutation groups became increasingly important through the work of Lagrange, Ruffini, Gauss, Abel, Cauchy, and especially Galois. The discovery of new types of geometries-including non-Euclidean, affine, projective etc.-led, eventually, to the famous Erlangen program of Klein, which proposed that the true study of any geometry lies in an analysis of its group of motions. In crystallography, the possible symmetries of the internal structure of a crystal were enumerated long before there was any possibility of its physical determination (by X-ray analysis).

书籍目录

Preface
 1 Basic definitions and examples 1.1 Groups: definition and examples 1.2 Homomorphisms: the relation between $SL(2, \mathbb{C})$ and the Lorentz group 1.3 The action of a group on a set 1.4 Conjugation and conjugacy classes 1.5 Applications to crystallography 1.6 The topology of $SU(2)$ and $SO(3)$ 1.7 Morphisms 1.8 The classification of the finite subgroups of $SO(3)$ 1.9 The classification of the finite subgroups of $O(3)$ 1.10 The icosahedral group and the fullerenes
 2 Representation theory of finite groups 2.1 Definitions, examples, irreducibility 2.2 Complete reducibility 2.3 Schur's lemma 2.4 Characters and their orthogonality relations 2.5 Action on function spaces 2.6 The regular representation 2.7 Character tables 2.8 The representations of the symmetric group
 3 Molecular vibrations and homogeneous vector bundles 3.1 Small oscillations and group theory 3.2 Molecular displacements and vector bundles 3.3 Induced representations 3.4 Principal bundles 3.5 Tensor products 3.6 Representative operators and quantum mechanical selection rules 3.7 The semiclassical theory of radiation 3.8 Semidirect products and their representations 3.9 Wigner's classification of the irreducible representations of the Poincare group 3.10 Parity 3.11 The Mackey theorems on induced representations, with applications to the symmetric group 3.12 Exchange forces and induced representations
 4 Compact groups and Lie groups 4.1 Haar measure 4.2 The Peter-Weyl theorem 4.3 The irreducible representations of $SU(2)$ 4.4 The irreducible representations of $SO(3)$ and spherical harmonics 4.5 The hydrogen atom 4.6 The periodic table 4.7 The shell model of the nucleus 4.8 The Clebsch-Gordan coefficients and isospin 4.9 Relativistic wave equations 4.10 Lie algebras 4.11 Representations of $su(2)$
 5 The irreducible representations of $SU(n)$ 5.1 The representation of $GL(V)$ on the r -fold tensor product 5.2 $GL(V)$ spans $\text{Horn}(r, TrV, TrV)$ 5.3 Decomposition of $\text{Tr}^r V$ into irreducibles 5.4 Computational rules 5.5 Description of tensors belonging to W 5.6 Representations of $GL(V)$ and $SL(V)$ on U 5.7 Weight vectors 5.8 Determination of the irreducible finite-dimensional representations of $SL(d, \mathbb{C})$ 5.9 Strangeness 5.10 The eight-fold way 5.11 Quarks 5.12 Color and beyond 5.13 Where do we stand
 Appendix A The Bravais lattices and the arithmetical crystal classes A.1 The lattice basis and the primitive cell A.2 The 14 Bravais lattices Appendix B Tensor product Appendix C Integral geometry and the representations of the symmetric group C.1 Partition pairs C.2 Proof of the main combinatorial lemma C.3 The Littlewood-Richardson rule and Young's rule C.4 The ring of virtual representations of all the S_n C.5 Dimension formulas C.6 The Murnaghan-Nakayama rule C.7 Characters of $GL(V)$ Appendix D Wigner's theorem on quantum mechanical symmetries Appendix E Compact groups, Haar measure, and the Peter-Weyl theorem Appendix F A history of 19th century spectroscopy Appendix G Characters and fixed point formulas for Lie groups
 Further reading
 Index

版权说明

本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问:<http://www.tushu007.com>