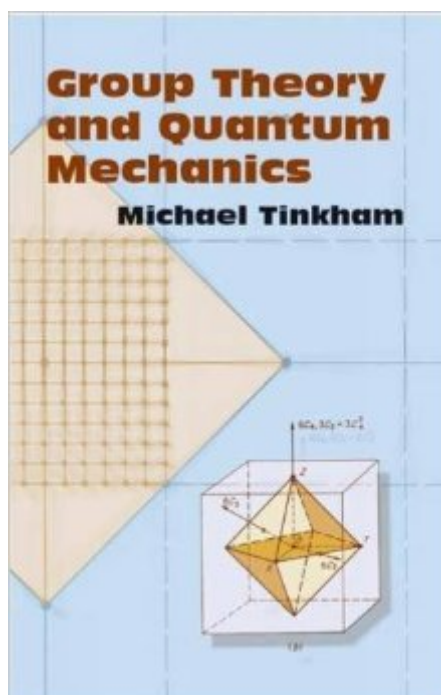# Group Theory And Quantum Mechanics (Dover Books On Chemistry)

Synopsis

This graduate-level text develops the aspects of group theory most relevant to physics and chemistry (such as the theory of representations) and illustrates their applications to quantum mechanics. The first five chapters focus chiefly on the introduction of methods, illustrated by physical examples, and the final three chapters offer a systematic treatment of the quantum theory of atoms, molecules, and solids.The formal theory of finite groups and their representation is developed in Chapters 1 through 4 and illustrated by examples from the crystallographic point groups basic to solid-state and molecular theory. Chapter 5 is devoted to the theory of systems with full rotational symmetry, Chapter 6 to the systematic presentation of atomic structure, and Chapter 7 to molecular quantum mechanics. Chapter 8, which deals with solid-state physics, treats electronic energy band theory and magnetic crystal symmetry. A compact and worthwhile compilation of the scattered material on standard methods, this volume presumes a basic understanding of quantum theory.

Book Information

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Customer Reviews

I have attempted to read other books on group theory, especially those intended for physicists, including Weyl's book The Theory of Groups and Quantum Mechanics. Tinkham's book, however, is the only one that I have been able to understand relatively well. Tinkham gently takes you by the hand and starts you out on a tutorial that addresses the symmetry of a simple example from plane

geometry, and then gradually builds up to more sophisticated problems. Character tables and the various orthogonality and normalization relations that make them useful are developed and used for both simple (e.g. plane geometry) and more sophisticated problems. Lie Groups, Schur's Lemma, angular momentum, crystal symmetry, and nature's inability to conserve parity are among the topics addressed.The treatment of Lorentz and Poincare groups required for a more sophisticated understanding of quantum field theory, however, is not included in this book--for those topics Weinberg's (The Quantum Theory of Fields, Volume 1: Foundations) suggestion of Tung's Group Theory in Physics would seem to be reasonable. I was also not able to understand Tinkham's proof of the Vector Addition Theorem for angular momentum.

Group Theory and Quantum Mechanics (Dover Books on Chemistry) Quantum Mechanics in Chemistry (Dover Books on Chemistry) Group Theory and Chemistry (Dover Books on Chemistry) Modern Quantum Chemistry: Introduction to Advanced Electronic Structure Theory (Dover Books on Chemistry) Quantum Mechanics and Quantum Field Theory: A Mathematical Primer Problems and Solutions in Quantum Chemistry and Physics (Dover Books on Chemistry) Symmetry: An Introduction to Group Theory and Its Applications (Dover Books on Physics) EROTICA: BUNDLE - TABOO BOOKS (SWINGERS, CUCKOLD, INTERRACIAL, SHARING, THREESOME, HOTWIFE SHORT SEX STORIES COLLECTION, BDSM GROUP, SEXY FF MM GROUP SERIES) Quantum Theory of Many-Particle Systems (Dover Books on Physics) Quantum Mechanics in Chemistry Second Edition Introduction to Quantum Mechanics in Chemistry Jokes For Kids - Joke Books : Funny Books : Kids Books : Books for kids age 9 12 : Best Jokes 2016 (kids books, jokes for kids, books for kids 9-12, ... funny jokes, funny jokes for kids) (Volume 1) Ace General Chemistry I and II (The EASY Guide to Ace General Chemistry I and II): General Chemistry Study Guide, General Chemistry Review Ace Organic Chemistry I: The EASY Guide to Ace Organic Chemistry I: (Organic Chemistry Study Guide, Organic Chemistry Review, Concepts, Reaction Mechanisms and Summaries) Ace General Chemistry I: The EASY Guide to Ace General Chemistry I: (General Chemistry Study Guide, General Chemistry Review) Number, Shape, & Symmetry: An Introduction to Number Theory, Geometry, and Group Theory Protecting Group Chemistry (Oxford Chemistry Primers) Flying Tigers Colors: Camouflage and Markings of the American Volunteer Group and the USAAF 23rd Fighter Group, 1941-1945 (Warplane Color Gallery) Beginning Group Theory for Chemistry Group Techniques for Program Planning: A Guide to Nominal Group and Delphi Processes