

<<物理学中的群论>>

图书基本信息

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作者：吴基东

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内容概要

group theory provides the natural mathematical language to formulate symmetry principles and to derive their consequences in mathematics and in physics. the "special functions" of mathematical physics, which pervade mathematical analysis, classical physics, and quantum mechanics, invariably originate from underlying symmetries of the problem although the traditional presentation of such topics may not expressly emphasize this universal feature. modern developments in all branches of physics are putting more and more emphasis on the role of symmetries of the underlying physical systems. thus the use of group theory has become increasingly important in recent years. however, the incorporation of group theory into the undergraduate or graduate physics curriculum of most universities has not kept up with this development. at best, this subject is offered as a special topic course, catering to a restricted class of students. symptomatic of this unfortunate gap is the lack of suitable textbooks on general group-theoretical methods in physics for all serious students of experimental and theoretical physics at the beginning graduate and advanced undergraduate level. this book is written to meet precisely this need.

there already exist, of course, many books on group theory and its applications in physics. foremost among these are the old classics by weyl, wigner, and van der waerden. for applications to atomic and molecular physics, and to crystal lattices in solid state and chemical physics, there are many elementary textbooks emphasizing point groups, space groups, and the rotation group. reflecting the important role played by group theory in modern elementary particle theory, many current books expound on the theory of lie groups and lie algebras with emphasis suitable for high energy theoretical physics. finally, there are several useful general texts on group theory featuring comprehensiveness and mathematical rigor written for the more mathematically oriented audience. experience indicates, however, that for most students, it is difficult to find a suitable modern introductory text which is both general and readily understandable.

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作者简介

作者：（美国）吴基东（Wu-Ki Tung）

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