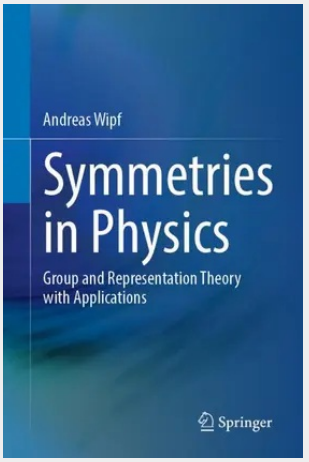
Wipf

Symmetries in Physics

Group and Representation Theory with Applications



The present book guides through the symmetries in physics: It introduces and discusses important groups and symmetries from atomic and molecular physics, solid-state physics, particle physics and (quantum) field theory. The book is aimed at physics students who are either attending lectures on group and representation theory or wish to delve into group theory and symmetries in physics as part of their bachelor's, master's, or doctoral thesis. Topics covered include finite and continuous groups, Lie algebras and their representations, as well as quantum mechanics, classical and quantized field theories, gauge theories, and conformal field theories. The author combines the mathematical foundations with physical applications in the chapters. Examples, exercises, and intermediate questions help readers to check their understanding.

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