

Modulbeschreibung für Vertiefungsmodule des Wahlpflichtbereiches

Titel des Moduls	Gruppentheorie in der Physik
In englischer Sprache	Group Theory in Physics

R	X
A	

	Vorlesung	Übung
Umfang	3	1

Inhalt	structure of groups; finite groups; Lie groups; representations of groups; group theory and quantum mechanics; applications in molecular and solid state physics; Lie algebras; three-dimensional rotation groups; semi-simple complex Lie algebras; semi-simple real Lie algebras; classical groups and Lie algebras: $su(n)$, $so(n)$, $sp(2n)$; representation theory of Lie algebras; roots and weights; Dynkin diagrams; Young diagrams; characters; classification of Lie algebras; exceptional algebras; Lorentz, Poincaré, and conformal algebras and groups; applications in the theory of elementary particles and in quantum field theory; Lie superalgebras and supergroups; infinite-dimensional Lie algebras.
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Voraussetzungen	Linear algebra; some knowledge of quantum mechanics is useful, but not absolutely necessary.
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Regelsemester	
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Abschluss	Klausur
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Prüfungszulassungsvoraussetzung	Bearbeitung von Übungsaufgaben
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Studienpunkte	7
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R = Reine Mathematik
A = Angewandte Mathematik