

## 课程大纲 COURSE SYLLABUS

1.	<b>课程代码/名称</b> <b>Course Code/Title</b>	PHY5011/物理学中的群论 Group Theory for Physicists
2.	<b>课程性质</b> <b>Compulsory/Elective</b>	专业必修课 Degree Required Course
3.	<b>课程学分/学时</b> <b>Course Credit/Hours</b>	4/64
4.	<b>授课语言</b> <b>Teaching Language</b>	中文 Chinese
5.	<b>授课教师</b> <b>Instructor(s)</b>	刘奇航 Qihang Liu
6.	<b>是否面向本科生开放</b> <b>Open to undergraduates or not</b>	是 YES
7.	<b>先修要求</b> <b>Pre-requisites</b>	(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.) 线性代数 I Linear Algebra 量子力学 I PHY206-15 Introduction to Quantum Mechanics
8.	<b>教学目标</b> <b>Course Objectives</b>	(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.)  完成本课程学习, 要求掌握群的基本概念及表示理论, 了解群表示论在量子力学中的应用, 以及点群, 空间群在固体物理中的应用。  Upon completing the course, the students are supposed to be familiar with: 1) the group representation theory. 2) the application of group representation theory to quantum mechanics. 3) the application of point group and space group to solid state physics.
9.	<b>教学方法</b> <b>Teaching Methods</b>	(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.)  本课程是理论课, 主要以课堂授课为主。  This is a theoretical course, mainly in class.
10.	<b>教学内容</b> <b>Course Contents</b>	(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.)
	<b>Section 1</b>	1.群的基本概念 Basic concepts of group theory
	<b>Section 2</b>	2.群的表示理论 Representation theory
	<b>Section 3</b>	3.完全转动群 Rotational group

<b>Section 4</b>	4.点群与空间群 Point group and space group
<b>Section 5</b>	5.群论与量子力学 Group theory and quantum mechanics
<b>11. 课程考核 Course Assessment</b>	
<p>( ① 考核形式 Form of examination; ②. 分数构成 grading policy; ③ 如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.)</p> <p>平时作业 20% + 期中考试 (闭卷笔试) 30%+ 期末考试 (闭卷笔试) 50%</p> <p>Homework(20%) + Mid-term Exam(30%) + Final Exam(50%)</p>	
<b>12. 教材及其它参考资料 Textbook and Supplementary Readings</b>	
<p>教材 (Textbook) :</p> <p>《群论及其在凝聚态物理中的应用》, 李新征著, 北京大学出版社。</p> <p>参考资料 (Supplementary Readings) :</p> <ol style="list-style-type: none"> <li>1.Group Theory: Applications to the Physics of Condensed Matter, by M. S. Dresselhaus, G. Dresselhaus and A. Jorio. Springer.</li> <li>2.《物理学中的群论》第二版, 马中骥著, 科学出版社。</li> <li>3.《群论及其在固体物理中的应用》第二版, 徐婉棠, 喀兴林著, 高等教育出版社。</li> </ol>	