

シラバス参照

開講年度/Year	2024
科目名	場の量子論基礎
曜日・講時/Day/Period	後期 金曜日 3講時
単位数/Credit(s)	2
担当教員/Instructor	米倉 和也
学期/Semester	後期
科目ナンバリング /Course code/number	SPH-PHY501B
使用言語 /Language Used in Course	2カ国語以上
メディア授業科目 /Media Class Subjects	
主要授業科目 /Essential Subjects	

所属講座等	Particle and Nuclear Theory (Particle Theory and Cosmology Group)
授業題目	Basic quantum field theory
Course Title	Basic quantum field theory
授業の 目的と概要	Quantum field theory is the basic framework for the fundamental laws of high energy physics. It is also a convenient tool for describing long-wavelength phenomena in condensed matter physics. This lecture explains basic theory of quantum field theory. It is assumed that the students have learned and deeply understood quantum mechanics.
Purpose /Abstract	Quantum field theory is the basic framework for the fundamental laws of high energy physics. It is also a convenient tool for describing long-wavelength phenomena in condensed matter physics. This lecture explains basic theory of quantum field theory. It is assumed that the students have learned and deeply understood quantum mechanics.
学習の 到達目標	To understand the basic concept of quantum fields
Goal	To understand the basic concept of quantum fields
授業内容・ 方法と 進捗予定	(1) Brief review of quantum mechanics (2) Scalar fields (spin 0) and their quantization (3) The Lorentz symmetry and spin one-half representations (4) Dirac fields (spin 1/2) and their quantization (5) Quantization of electromagnetic fields (spin 1) (6) Introduction to Interactions of quantum fields
Contents and progress schedule of the class	(1) Brief review of quantum mechanics (2) Scalar fields (spin 0) and their quantization (3) The Lorentz symmetry and spin one-half representations (4) Dirac fields (spin 1/2) and their quantization (5) Quantization of electromagnetic fields (spin 1) (6) Introduction to Interactions of quantum fields
成績評価 方法	report and/or exam (to be announced in classes)
Grading	report and/or exam (to be announced in classes)
教科書 および 参考書	Not specified



Books required /referenced	Not specified
授業時間外 学習	(1) Review quantum mechanics well enough before taking these classes (2) Review after each class
Preparation and review	(1) Review quantum mechanics well enough before taking these classes (2) Review after each class
実務・ 実践的授業 /Practical business ※○は、 実務・実践的 授業であるこ とを示す。 /Note:“○” Indicates the practical business	
その他	
Remarks	
更新日付	2024/03/14 12:30

1単位の授業科目は、45時間の学修を必要とする内容をもって構成することを標準としています。1単位の修得に必要な学修時間の目安は、「講義・演習」については15～30時間に授業および授業時間外学修（予習・復習など）30～15時間、「実験、実習及び実技」については30～45時間の授業および授業時間外学修（予習・復習など）15～0時間です。
One-credit courses require 45 hours of study. In lecture and exercise-based classes, one credit consists of 15-30 hours of class time and 30-15 hours of preparation and review outside of class. In laboratory, practical skill classes, one credit consists of 30-45 hours of class time and 15-0 hours of preparation and review outside of class.

