UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Quantum Mechanics

2021-3-E3001Q072

Aims

Introduction to Quantum Mechanics

Contents

Fundaments of Quantum Mechanics

Detailed program

The crisis of Classical Physics

The Schrödingerequation and its probabilistic interpretation

Heisenberg uncertainty relations

General properties of the Schrödingerequation

The general principles of quantum mechanics

Unidimensional problems, the harmonic oscillator

Angular momentum and spin

Tri-dimensional problems

Motion in a central potential; the hydrogen atom

Interaction with a classic electromagnetic field

Identical particles

Perturbation theory

Introduction to Relativistic Quantum Mechanics

Quantization of the electromagnetic field

Prerequisites

Good knowledge of Classical Physics

Teaching form

Lessons, 12 credits

Due to Covid-19 restrictions, lectures will be streamed and registered for asynchronous access.

Discussion and question sessions will be organised.

Textbook and teaching resource

D.J. Griffiths, “Introduction to Quantum Mechanics”

S. Forte, L. Rottoli "Fisica Quantistica"

C. Cohen-Tannoudji, B. Diu, F. Laloe, “Quantum Mechanics” vol I e II

S. Gasiorowicz, "Quantum Physics", III ed

J.J. Sakurai, J. Napolitano, “Modern Quantum Mechanics”

L.D. Landau, E.M. Lifshitz, “Quantum Mechanics”

F. Schwabl, " Quantum Mechanics"

"The Feynman Lectures on Physics", Vol III. Free access website http://www.feynmanlectures.caltech.edu

Semester

First semester

Assessment method

Written and oral examination

During the course, two optional intermediate written examinations will be proposed. If both of them are passed, final written examination is waived.

Due to Covid-19 restrictions written and oral examination will be web based:

written examinations will be on the platform

https://esamionline.elearning.unimib.it/

oral examinations will be via videoconference (Zoom, Webex, Meet).

Office hours

On student request, at agreed time