Advanced Quantum Theory
86-803-01

Lecturer: Prof. Efrat Shimshoni
Course type: Lecture + tutorial
Date: 2019-2020 semester: A weekly hours: 2L+2P

Aim of course:


Details of subjects to be covered:

- Quantization of fields, quantum electrodynamics, interaction between electrons and electromagnetic field.
- Path integrals formulation of single particle quantum mechanics, and coherent states path integrals of many-body systems
- Superfluidity and superconductivity, Bose-Einstein condensation, high-temperature superconductivity.
- Relativistic quantum mechanics, Dirac theory
- Green function, Feynman diagrams.
- Quantum versus classic mechanics, WKB and other approximations.

Course mandatories:

Assignments: Homework and final exam.

Grading:

80% exam, 20% homework.
Bibliography:

A. Altland and B. Simons, "Condensed Matter Field Theory".
Tom Lancaster and S. J. Blundell, "Quantum Field Theory for the Gifted Amateur".