

Course material - FYSN17/FMFN01 VT2016

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1 General information

The lectures are divided into the following chapters:

1. The formalism of quantum mechanics (Formalism).
2. The quantum harmonic oscillator (HO).
3. The theory of angular momentum.
4. Charged particle in a magnetic field (B field).
5. Perturbation theory.
6. Many particle systems.

The material you should know for the exam will be treated during the lectures and/or the exercise classes. Some things that are covered in the books are not or only partially covered during the lecture, but good to read. Optional reading material (that you can forget about if you don't have time) is marked with a star. You can choose one of the books, or even some other book that you like better, but you should make sure you cover the material discussed during the lectures and exercise classes. The following list might be adapted at later times, depending on the pace of the lectures. If this is the case I will say so during the lecture, but please check for updates yourself.

2 Reading list

2.1 Quantum Mechanics - Bransden & Joachain

- Formalism & HO: Chapter 5.1-5.7, 5.8*, and Chapter 7.1
- Angular momentum: Chapter 6 and Chapter 7.2
- B field: Chapter 11.1, 12.1* and 12.2-12.3
- Perturbation theory: Chapter 8.1-8.2, 8.3* and Chapter 9.1-9.2, 9.3*
- Many particles: Chapter 10.1-10.5

2.2 Modern Quantum Mechanics - J.J. Sakurai

- Formalism & HO: Chapter 1 and Chapter 2.1, 2.2*, 2.3-2.4
- Angular momentum: Chapter 3.1, 3.2-3.4*, 3.5-3.7
- B field: Chapter 5.3
- Perturbation theory: Chapter 5.1-5.3, 5.4*, 5.5-5.6
- Many particles: Chapter 6.1-6.4