Quantum Theory of Materials

2 units (selection)

Yoshitaka Michihiro · Associate Professor / Production Systems Engineering, Mechanical Engineering, Intelligent Structures and Mechanics Systems Engineering

Target〉 This class introduces the advanced quantum mechanics and quantum field theory.

Outline〉 Basics of advanced quantum mechanics and quantum field theory are introduced.

Style〉 Lecture

Keyword〉 ***quantum mechanics, quantum field theory***

Goal〉 To understand the outline of advanced quantum mechanics and quantum field theory.

Schedule〉

1. Introduction
2. Quantum mechanics (1)
3. Quantum mechanics (2)
4. Hartree-Fock approximation
5. Koopman's theorem
6. Density functional theory
7. Kohn-Sham equation
8. Local density approximation
9. Perturbation (1)
10. Perturbation (2)
11. Quantum field theory
12. Creation operator and annihilation operator
13. Field quantization (1)
14. Field quantization (2)
15. Phonon
16. Electron gas

Evaluation Criteria〉 Assignments count 100%.

Textbook〉 To be introduced in the class.

Reference〉 To be introduced in the class.

Contents〉 http://cms.db.tokushima-u.ac.jp/cgi-bin/toURL?EID=216906

Contact〉

⇒ Yoshitaka Michihiro (A203) (Office Hour: 木曜日17時-18時)