

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=216904>

Contact

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