教科書結構

單質點系統與數學結構

- Failure of classical physics and pre-quantum development (Chapter 1)

- The wave aspect of particles, the description of the matter wave, and the Schrodinger equation (Chapters 2)

- Mathematical structure of the Schrodinger equation ,meanings of eigenvalues and eigenfunctions (Chapter 3)

- Simple 1D quantum systems (Chapter 4)

- The general structure of the wave mechanics (the measurement theory of quantum physics) (Chapter 5)

- Operator method (Chapter 6, will be skipped)

多自由度系統

- 2D and 3D potentials for single particles (Chapter 7 , 8 & 9)

- Angular momentum and spins (Chapters 7, 9, &10)

- The Hydrogen atom and those beyond the Coulomb interactions (Chapters 8 & 12)

- The general structure of many-particle systems (Chapter 13)

- Multi-electron atoms and molecules (Chapter 14)

Approximated Methods

- Time-independent perturbation theory (Chapter 11)

- Time-dependent perturbation theory (Chapter 15)

Interactions with EM fields

- The interaction of charged particles with the electromagnetic field (Chapter 16)

- The interaction of EM fields with atoms (Chapter 15, 17, part of 18)

Collision theory (Chapter 19)