

Registration required: <https://lv.physik.uni-kl.de/registration/>  
All material will be found online: <https://www.physik.uni-kl.de/eggert/festkoerper/>

**Lectures:** Mo. 11:45-13:45 in room 46-576 (starting 22.4.2024)  
Thu. 10:00-11:30 in room 46-576  
Sebastian Eggert, Office: 46-551, Tel.: 205-2375 e-mail: seggert

**Excercises:** Wed 13:45-15:15 in room 46-387 (starting 8.5.2024)  
Larissa Schwarz, Office: 46-554, Tel.: 205-2299 e-mail: laschwar

## Suggested literature:

1. Ashcroft and Mermin: Solid State Physics, Saunders College, 1976.
2. Altland and Simon: Condensed Matter Field Theory (Cambridge)
3. Czycholl: Theoretische Festkörperphysik, Springer 2004
4. Kittel: Quantum Theory of Solids, Wiley, 1963. (Quantentheorie der Festkörper, Oldenburg)
5. Nolting: Grundkurs Theoretische Physik, Bd. 7: Vielteilchentheorie, Springer 2004.
6. Rössler: Solid State Theory, Springer 2004

Springer books are free of charge via the library.

## Contents:

1. Lattices and Phonons: Fourier-Transformation, 2<sup>nd</sup> Quantization, Phonon thermodynamics
2. Electrons: Calculating Band-Structure, Hubbard interaction
3. Superconductivity: Electron-Phonon-Interaction, BCS and Ginzburg-Landau Theory
4. Magnetism: Magnons, Phase Transitions, Quantum Hall Effect