

Module: Elective Advanced Lectures: BCGS Courses

Module No.: physics70d

Course:



Optical Spectroscopy (E/A)

Course No.:

Category	Type	Language	Teaching hours	CP	Semester
Elective	Lecture	English	2	3	WT/ST

Requirements for Participation:

Preparation:

Basic knowledge in condensed matter physics

Form of Testing and Examination:

Oral examination

Length of Course:

1 semester

Aims of the Course:

Understanding of the basic concepts and techniques of optical spectroscopy on solid-state samples.

Contents of the Course:

Topics covered are:

Electromagnetic waves in matter, dielectric function

Electromagnetic response of metals and insulators, Drude-Lorentz model

Kramers-Kronig relations

THz spectroscopy (time domain and cw)

Fourier-transform spectroscopy

Ellipsometry

Examples of current research (phonons, magnons, orbital excitations, superconductors, ...)

Recommended Literature:

Skriptum (available during the course)

Dressel/Grüner: Electrodynamics of Solids: Optical Properties of Electrons in Matter (Cambridge, 2002)

Klingshirn: Semiconductor Optics (Springer, 1997)

Kuzmany: Solid-State Spectroscopy: An Introduction (Springer, 2009)