Optical Spectroscopy (E/A) - Optical Spectr.

Degree - M.Sc. in Physics (PO von 2014)

Module	**Elective Advanced Lectures: BCGS Courses**
Module No.	physics70d

Course	**Optical Spectroscopy (E/A)**
Course No.	Optical Spectr.

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)