PHYS-630

Advanced experimental methods in condensed matter and nanophysics

Kern Klaus

Cursus	Sem.	Type
Advanced Manufacturing		Opt.
Photonics		Opt.
Physics		Opt.

Language of teaching	English
Credits	2
Session	
Exam	Oral
Workload	60h
Hours	**36**
Courses	28
TP	8
Number of positions	**10**

Frequency

Every year

Remark

Next time: Spring (Block course) (Stuttgart - Germany)

Summary

The objective of the course is to expose PhD students to experimental measurement techniques and principles applied in front end research of condensed matter and nanophysics. Besides providing a solid background, it will focus on the crucial details which will make cutting edge experiments work.

Content

- Introduction
- Solids at the nanoscale
- Nanostructure fabrication: physical and chemical methods
- Matter at low temperatures, ultrahigh vacuum, low signal amplification
- Actuators and transducers as experimental tools
- Electronic transport
- Microscopy with atomic resolution: from electron microscopy to scannig probes
- Optics at the nanoscale
- Excitation spectroscopy: from electron spectroscopy to synchrotron based approaches

Note

The course will take place by Zoom from Monday 19.07.21 to Friday 23.07.21.