Im Rahmen der Wahlpflichtfachausbildung im physikalischen Vertiefungsgebiet

Elektronische Eigenschaften von Festkörpern

wird im Sommersemester 2016 folgende Vorlesung angeboten:

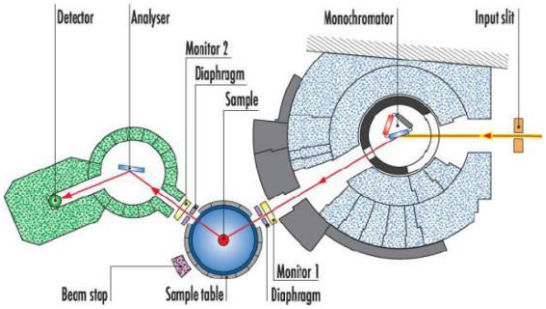
Modern Aspects of X-ray and Neutron Scattering

(lectures will be given in English)

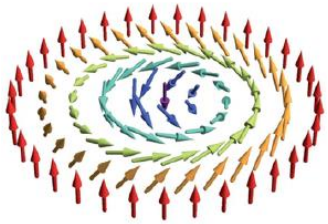
J.-Prof. Dr. Dmytro Inosov

WO?	**PHY/D016**
WANN?	**Donnerstags 2. DS (09:20 - 10:50 Uhr)**
	Erste Vorlesung: 14.04.2015
	(die Vorlesung am 07.04.2016 fällt aus!)
FÜR WEN?	**Physikstudierende ab dem 6. Fachsemester**

Topics covered in this lecture course



- **Sources of x-ray and neutron radiation**
  — laboratory x-ray sources, synchrotron sources
  — pulsed and continuous neutron sources
- **Elastic X-ray scattering**
  — X-ray diffraction, diffuse x-ray scattering,
  — resonant and non-resonant scattering
- **Inelastic X-ray scattering**
  — Resonant and non-resonant inelastic x-ray scattering
  — Probing spin, lattice, and orbital excitations with x-rays



- **Basics of neutron scattering**
  — Properties of neutrons, scattering laws, neutron sources, neutron optics
  — Nuclear vs. magnetic scattering, introduction to spin-polarized neutrons
- **Inelastic neutron scattering**
  — Elementary excitations in solids, measurements of phonon dispersions
  — Magnetic inelastic scattering: spin waves in long-range ordered magnets
  — Other types of magnetic excitations in solids (spin chains, frustrated magnetism)
- **Spectroscopy with spin-polarized neutrons**
  — Production of spin-polarized neutrons, introduction to the polarization analysis
  — Neutron spin-echo spectroscopy
- **Small-angle neutron scattering**
  — Technical aspects, applications to vortex lattices in superconductors and skyrmion lattices