Fakultät Physik

technische universität dortmund

Radiation Detection Instrumentation for Medical Physics

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&
Ulrich Bonse Visiting Chair for Instrumentation (Winter term 2025/2026)

Subject

Starting with theory of radiation dosimetry for electrons and photons, it explores the definition of absolute dose and radiation dose measurement protocols. The course examines the concept of relative dose measurement and properties of ionization chambers and their design principles. Semiconductor detectors and their response to radiation is developed for different applications including medical radiation physics. Other dosimetry technology are explored including Thermoluminescent dosimeters, radiochromic and Gafchromic film, chemical dosimeters, scintillators and their application in dosimetry. An excursus is proposed to emerging technologies for dosimetry such as use of amorphous silicon, organic semiconductor and perovskite based device. Radiation damage of electronic based detectors is also presented with emphasis on total ionizing dose and single event effects.

Audience:

Master of Physics
Master of Medical Physics and Physics of Living Systems

Schedule

Lecture: Wednesday 10:15- 11:45, P2-01-410 (Start: 22.10.2025)
Lab: Thursday 14:15 – 15:45, P2-02-508 (Start: 23.10.2025)

More information on LSF: