**Modules:**

physics700 **Elective Advanced Lectures**
physics710 **Experimental Physics**
physics720 **Applied Physics**

# Course: Particle Detectors and Instrumentation (E/A)

**Course No.:** physics713

| Category | Type | Language | Teaching hours | CP | Semester |
|---|---|---|---|---|---|
| Elective | Lecture with laboratory | English | 3+1 | 6 | ST |

**Requirements:**

**Preparation:**
Completed B.Sc. in Physics, with experience in quantum mechanics, atomic- and nuclear physics

**Form of Testing and Examination:**
Requirements for the examination (written or oral): successful work with the exercises

**Length of Course:**
1 semester

**Aims of the Course:**
Designing an experiment in photoproduction on pi-0, selection and building of appropriate detectors, set-up and implementation of an experiment at ELSA

**Contents of the Course:**
Quark structure of mesons and baryons, nucleon excitation; electromagnetic probes, electron accelerators, photon beams, relativistic kinematics interaction of radiation with matter, detectors for photons, leptons and hadrons; laboratory course: setup of detectors and experiment at ELSA

**Recommended Literature:**
B. Povh, K. Rith, C. Scholz, F. Zetsche; Teilchen und Kerne (Springer, Heidelberg 6. Aufl. 2004)
Perkins; Introduction to High Energy Physics (Cambridge University Press 4. Aufl. 2000)
W. R. Leo; Techniques for Nuclear and Particle Detection (Springer, Heidelberg 2. Ed. 1994)
K. Kleinknecht; Detektoren für Teilchenstrahlung (Teubner, Wiesbaden 4. überarb. Aufl. 2005)