**Modules:**

physics70a **Elective Advanced Lectures: Experimental Physics**
physics70b **Elective Advanced Lectures: Applied Physics**

# Course: Hands-on Seminar: Detector Construction (E/A)

**Course No.:** physics723

| Category | Type | Language | Teaching hours | CP | Semester |
|---|---|---|---|---|---|
| Elective | Laboratory | English | 2 | 3 | WT/ST |

**Requirements for Participation:**
Basic knowledge of particle physics

**Preparation:**
physics618 is helpful but not mandatory

**Form of Testing and Examination:**
Credit points can be obtained after successful construction and operation of the detector and preparing a written and/or oral report on a specific task

**Length of Course:**
1 semester

**Aims of the Course:**
Students will design, construct, assemble and operate a particle detector.

**Contents of the Course:**
Students will construct, assemble and commission a particle detector. They will gain hands-on experience on detector construction. The students organize and execute the tasks of the project in personal responsibility. This includes many tasks common to more complex research or industrial projects. Topics include:

- order the needed detector components
- prepare CAD drawings
- prepare PCB layout
- develop electronic circuits
- produce and assemble detector parts
- vacuum technology
- cooling technology
- organize the work effort in personal responsibility
- communicate with team members and technical staff

**Recommended Literature:**
H. Kolanoski, N. Wermes, Teilchendetektoren, (Springer, Heidelberg, 2016)
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)