

## Advanced Gaseous Detectors - Theory and Practice (E) - physics722

<i>Course</i>	Advanced Gaseous Detectors - Theory and Practice (E)
<i>Course No.</i>	physics722

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

### Requirements for Participation:

**Preparation:** Completed B.Sc. in physics, with experience in electrodynamics, quantum mechanics, nuclear and particle physics, physics618 (Physics of Particle Detectors)

**Form of Testing and Examination:** Requirements for the examination (written or oral): submission of report

**Length of Course:** 1 semester

### Aims of the Course:

- Design, construction, commissioning and characterization of a modern gaseous particle detector
- Simulations: GARFIELD, GEANT, FE-Methods, etc.
- Signals, Readout electronics and Data Acquisition
- Data analysis: pattern recognition methods, track fitting
- Scientific writing: report

### Contents of the Course:

- Signal formation in detectors
- Microscopic processes in gaseous detectors
- Readout electronics
- Tools for detector design and simulation
- Performance criteria
- Laboratory course: commissioning of detector with sources, beam test at accelerator
- Track reconstruction

### Recommended Literature:

<http://root.cern.ch>

<http://garfieldpp.web.cern.ch/garfieldpp/>

Blum, Rolandi, Riegler: Particle Detection with Drift Chambers

Spieler: Semiconductor Detector Systems

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