Short Course 2
Detectors for Astroparticle and Synchrotron Radiation Experiments

---

Saturday, October 16, 08:30 - 12:30 Room Cesarea

Organizer: Albert H. Walenta, Universität Siegen
Instructors: Razmik Mirzoyan, MPI München
Albert H. Walenta, Universität Siegen

Particle detectors can have a large variety of applications. The subject of astroparticle physics has evolved from the field of cosmic rays. Cosmic ray experiments in the past were mailnly involved with earthbound detectors. e.g. to measure the various cosmic ray components at sea level. More recently experiments in space have provided a wealth of informations on primary particle spectra and electromagnetic radiation in many different spectral ranges. The detectors used for these applications are similar to experiments at accelerators, however they have to work under relatively harsh conditions.
In contrast, synchrotron radiation experiments require techniques for the measurement of keV photons at high repetion rates. In addition, the reduction of noise, and the use of large area detectors is a challenge for dedicated detectors in this field.

Topics to be discussed

Requirements for Astroparticle Physics Experiments

Detectors for X-ray experiments

Detectors for γ-ray experiments

Detectors for primary cosmic rays (AMS, PAMELA)

Synchrotron light sources

Synchrotron beam lines

Imaging detectors for X-rays

K-edge subtraction techniques

Compton camera

High time resolution imaging

Angiography

Diffraction enhanced imaging