

The PANDA detector at FAIR

Friday, September 9, 2011 10:00 AM (30 minutes)

The PANDA experiment is one of the key projects at the future FAIR facility, which is currently under construction at GSI, Darmstadt. It will be located at the HESR storage ring that will deliver antiproton beams of unrivalled intensity and quality within a momentum range of 1.5 GeV/c and 15 GeV/c. Measurements will be performed with a fixed-target setup using frozen hydrogen and heavier nuclei as internal targets. The experiment will yield high luminosities of up to $2 \times 10^{32} \text{ cm}^{-2} \text{ s}^{-1}$. PANDA will address a variety of topics centered around a deeper understanding of strong QCD by means of hadron spectroscopy in the charm quark sector. Amongst others, this includes the search for exotic states in the charmonium region, the interaction of charm hadrons with the nuclear medium or the study of double-hypernuclei.

To cover the broad physics program, the PANDA apparatus has to serve as a multi-purpose detector. It employs a target spectrometer surrounding the interaction point and a forward spectrometer covering small forward angles. For the momentum analysis of charged particles a solenoid and a dipole magnet are used in the central and the forward part, respectively. The overall detector design aims at fully exclusive measurements. Therefore, it possesses a high detection capability for both charged and neutral particles over the full solid angle. Both spectrometers are equipped with adequate detector sub-systems for particle tracking, calorimetry and particle identification. Due to the high beam intensities all detector sub-systems must withstand a large radiation dose and exhibit high rate capability.

The presentation will give an overview to all basic parts of the PANDA apparatus and describe the status of the ongoing detector development. Moreover, the experimental conditions will be summarized which define very challenging technical requirements on the individual subsystems. Besides the discussion of main detector sub-systems, an outline of the overall detection concept of PANDA will be given. It includes a very sophisticated concept for the data acquisition and trigger conditions based on self-triggering at lowest hardware level.

Primary author: Mr WÜRSCHIG, Thomas (HISKP, Uni Bonn)

Presenter: Mr WÜRSCHIG, Thomas (HISKP, Uni Bonn)

Session Classification: Facilities and Experiments I

Track Classification: Facilities and Experiments