



ID de Contribution: 32

Type: **Poster**

## The Barrel DIRC of the PANDA Experiment at FAIR

*jeudi 6 mai 2010 10:00 (1 minute)*

Cooled antiproton beams of unprecedented intensities in the momentum range of 1.5-15 GeV/c will be used at the PANDA experiment at FAIR to perform QCD studies including searches for exotic states and high precision experiments in the charmed quark sector.

Charged particle identification in the barrel region needs a thin detector operating in a strong magnetic field. Both requirements can be met by a Ring Imaging Cherenkov detector using the DIRC principle. Combining the time of arrival of the photons with their spatial image determines not only the particles velocity, but also the wavelength of the photons. Therefore, dispersion correction at the lower and upper detection threshold becomes possible.

Long, rectangular bars made from synthetic fused silica are used as Cherenkov radiator and light guide. The optical properties, such as bulk transmission and surface reflectivity, are of critical importance to the DIRC performance. We developed a motion-controlled system using lasers wavelength from 266nm to 635nm to measure the coefficient of total internal reflection which can be used to determine the quality of the surface polish with a precision of a few Angstrom.

We present details of the design of a prototype for the Barrel DIRC detector of the PANDA experiment at FAIR and its performance in a proton test beam as well as measurements of the optical properties of prototype bars.

**Please indicate "poster" or "plenary" session. Final decision will be made by session coordinators.**

poster

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**Classification de Session:** Poster Session 2 (Summary)

**Classification de thématique:** Research & Development for future experiments