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The PANDA Barrel DIRC Detector

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The PANDA detector at the international accelerator Facility for Antiproton and Ion Research in Europe (FAIR) near GSI, Darmstadt, Germany will address fundamental questions of hadron physics.

Excellent Particle Identification (PID) over a large range of solid angles and particle momenta will be essential to meet the objectives of the rich physics program, which includes charmonium spectroscopy, the search for hybrids and glueballs, and the study of the interaction of hidden and open charm particles with nucleons and nuclei. Charged PID for the barrel section of the target spectrometer will be provided by a DIRC (Detection of Internally Reflected Cherenkov light) detector.

This counter will cover the angular range of 22-140 degrees and will need to cleanly separate charged pions from kaons for momenta between 0.5 GeV/c and 3.5 GeV/c with a separation power of at least 3 standard deviations.

The design of the PANDA Barrel DIRC detector is based on the successful BABAR DIRC and the SuperB FDIRC R&D with several important improvements to optimize the performance for PANDA, such as a focusing lens system, fast timing, and a compact fused silica prism as expansion region.

We will discuss the baseline design of the PANDA Barrel DIRC, based on narrow bars made of synthetic fused silica and a complex multi-layer spherical lens system, and the potentially cost-saving design option using wide fused silica plates and will present the result of tests of a large system prototype with a mixed hadron beam at CERN.

Registered

Yes

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