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Study of the performance of FT - EMC combined subsystems by measuring cosmic rays

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Collaboration

Abstract content

Straw tube detector developed for the PANDA experiment[1], will be used for tracking charged particles in the Forward Tracker (FT) for the identification of protons, pions and kaons based on the energy loss information. It will complement a high precision electromagnetic calorimetry(EMC), tracking and particle identification in the central region by means of the target spectrometer.The detector will be operated with interaction rates up to 20 MHz and read-out by a Data AcQuisition system (DAQ) performing on-line event selection according to various algorithms[2]. Synchronization Of Data Acquisition Network (SODAnet) is the protocol used to synchronize individual subsystems by providing a common clock signal and timestamps. The reconstruction of events out of many fragments is done with the Burst Building Network. The first tests of the FT-EMC combined DAQ system, have provided data sets that allow to analyze the performance of the subsystems for cosmic rays. Those tests allow to evaluate detectors as well as synchronization and processing systems. The reconstruction of particle tracks has been developed and crosschecked with the use of both detecting subsystems. The results on the track reconstruction, spatial resolution and energy loss via Time over Threshold (TOT) will be presented together with the DAQ performance.

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