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Performance Monitoring of the Barrel Time-of-Flight Supermodule for the PANDA Experiment at FAIR

Performance Monitoring of the Barrel Time-of-Flight Super-Module for the PANDA Experiment at FAIR

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The PANDA experiment at FAIR in Darmstadt will use proton-antiproton collisions, with momenta ranging from 1.5 GeV/c to 15 GeV/c, on a fixed target to study open questions in hadron physics. The Barrel Time-of-Flight detector for this experiment is a scintillating tile hodoscope based on 16 identical and independent subdetectors called Super-Modules arranged in a cylindrical configuration. Extensive studies of the performance of one such Super-Module have been carried out to prove the feasibility of the Barrel Time-of-Flight detector design. Time resolution, signal delay and amplitude drop along the length of the detector were measured and analyzed as a function of the position on the individual scintillator tiles. An excellent time resolution of about 50 ps has been achieved, which is very important for event timing and particle identification.

Primary experiment

PANDA

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