

Reference Tracking System for Performance Studies of Small Straw Tracker Prototypes for the Future SPD Detector at the NICA Collider

Tuesday 28 October 2025 15:00 (15 minutes)

Straw Tracker will be one of key detectors of the SPD experiment at the NICA collider. At all steps of the tracker design and development, it is crucial to evaluate performance of early stage prototypes in order to reach the best tracking performance.

These tests are carried out using a dedicated setup equipped with a reference tracking system consisting of Timepix4 and MicroMegas detectors. This system provides independent measurements of particle tracks, which are used as a reference in performance studies of the straw tracker prototypes. During the performance test, continuous data quality checks and monitoring of the reference tracking system are necessary to ensure the accuracy of the measurements. In this work, we present an analysis of simultaneous hits recorded by different elements of the reference system, along with first results on correlations between the straw response and the reference muon track coordinates.

These results highlight the essential role of the reference tracking system in the future calibration and validation of Straw Tracker prototypes.

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Session Classification: Instruments and Methods of Experimental Physics

Track Classification: Instruments and Methods of Experimental Physics