

Track reconstruction in the upgraded tracking system of MPD/NICA.

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Although the start-up of the MPD experiment is still ahead, the work on the preparation and physics validation of the future detector upgrade program has already been initiated.

As one of the possible MPD upgrade steps, an Inner Tracking System (ITS) based on the next generation silicon pixel detectors is being considered to be installed between the beam pipe and the Time Projection Chamber (TPC). It is expected that such a detector will increase the research potential of the experiment for both the proton-proton (high luminosity) and nucleus-nucleus (high particle multiplicity) interactions. According to the proposed design, the MPD ITS will consist of five layers of silicon pixel detectors. The main purpose of the ITS is to provide a better precision of the primary and secondary vertex reconstruction and improve track reconstruction in the MPD in the region close to the interaction point.

The existing in the MPD track reconstruction method is based on the Kalman filter in the TPC. Its simple extension to the ITS is not considered as the most efficient approach. Therefore, another method, based on the "vector finder" approach, was developed. The talk will describe the proposed algorithm and present its performance results for primary and secondary track reconstruction in the MPD ITS obtained on Monte-Carlo generated data of nucleus-nucleus collisions.

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