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Position alignments and vertex determination for sPHENIX INTT detector

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The sPHENIX experiment has been taking data since 2023 at the Relativistic Heavy Ion Collider(RHIC) at Brookhaven National Laboratory, USA. We aim to study the properties of the Quark-Gluon Plasma.
The INTT consists of two cylindrical layers of silicon detectors that can precisely measure the passage positions of charged particles. By using the collision point (vertex) of ions and the measurement points from the INTT, we can reconstruct the particle tracks.
The collision vertex is spread within ˜10cm in z direction at the interaction region because of 2m radian crossing angle of the beams. It is necessary to determine z-vertex position event by event basis precisely.We developed the vertex determination method using INTT and studied its performance using some different algorithms.
In addition, the position alignment of the INTT sensors are an important parameter for not only INTT vertexing but also track reconstruction associated with inner and outer trackers. We studied the alignment using the straight line tracks measured in p+p collision with no magnetic field.
In this poster, we will report the current status of INTT vertex determination and INTT alignment using the p+p data recorded in 2024.

Category

Experiment

Collaboration

sPHENIX

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