Contribution ID: **7**   Type: **Plenary**

Track Finding for the PANDA Experiment

Thursday 2 June 2022 10:20 (15 minutes)

The PANDA experiment at FAIR (Facility for Antiproton and Ion Research) in Darmstadt is a fixed target experiment currently under construction. The accelerator will be operated at energies from 1.5 GeV/c to 15 GeV/c to perform hadron specroscopy and nuclear structure studies. In this context, the production and decay of heavy baryons containing strange quarks, so called hyperons, is of particular interest.

Track reconstruction is essential for hyperon detection, and this task is even more challenging because hyperons typically fly several centimeters before they decay. Therefore, secondary track finding plays a key role for PANDA. One of the most challenging parts of track finding in PANDA is the complex data typology. Usually, tracking algorithms use two-dimensional or three-dimensional hit points to perform a circle or a helix fit. PANDA also features time information to the 2D measurement, which result in cylindrical measurements that are tangent to the tracks.

Different tracking algorithms dealing with these challenges will be presented. Furthermore, the reconstruction efficiency for a typical hyperon decay will be analyzed using simulated data. It will be shown that the reconstruction efficiency could be improved by 30% compared to the currently existing tracking algorithm in PANDA.

Consider for young scientist forum (Student or postdoc speaker)

Yes

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