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Track Seeding in the sPHENIX Experiment

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The tracking reconstruction procedure for the sPHENIX experiment combines data from its silicon pixel detector, silicon strip detector, time projection chamber, and micromegas-based outer tracker modules to produce tracks that trace a given particle's path through 57 total sensor layers. After clustering of the raw data is completed, the track seeding modules identify chains of clusters that correspond to valid tracks, lengthen these cluster chains by including additional clusters on the same path, and perform a preliminary fit that serves as an initial estimate for later modules. Two separate seeding modules are employed: a cellular-automaton seeding algorithm based on the ALICE time projection chamber seeding algorithm is used for the time projection chamber, while a seeding algorithm provided by the A Common Tracking Software package forms the basis of the silicon detector seeding module. In this poster, we describe the structure and performance status for the modules used in sPHENIX track seeding, based on data from the 2023 Au+Au data taking period.

Category

Experiment

Collaboration (if applicable)

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