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4D Track Reconstruction at the sPHENIX Experiment

Wednesday, 1 June 2022 14:30 (25 minutes)

The sPHENIX detector is a next generation QCD experiment being constructed for operation at the Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory. sPHENIX will collect high statistics $p + p$, $p + \text{Au}$, and $\text{Au} + \text{Au}$ data starting in 2023. The high luminosities that RHIC will deliver create a complex track reconstruction environment that is comparable to the High Luminosity LHC. Tens of thousands of hits need to be reconstructed into tracks associated with the primary collision and pile up interactions. To further complicate data taking, sPHENIX will operate a streaming read-out data acquisition system where data will be recorded without an explicit association to an event designated by a hardware trigger. To meet its physics requirements, sPHENIX has developed track reconstruction software using the A Common Tracking Software (ACTS) package that reconstructs tracks utilizing 3D measurements and timing information from the tracking detectors. In this talk, the sPHENIX 4D track reconstruction will be discussed in the context of triggered and streaming data taking modes.

Consider for young scientist forum (Student or postdoc speaker)

No

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