Charged-particle multiplicity measurement in Au+Au collisions at $\sqrt{s_{\mathrm{NN}}} = 200$ GeV with sPHENIX at RHIC

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Abstract

sPHENIX, the first detector to be built at the Relativistic Heavy-Ion Collider (RHIC) in over two decades, will bring unprecedented measurement capabilities at RHIC energies. One of the initial physics measurements to be performed by sPHENIX is the charged-particle multiplicity, which utilizes the tracklet analysis method with the cluster information from the Monolithic-Active-Pixel-Sensor-based Vertex detector (MVTX). This measurement serves to directly demonstrate, based on real collision data, that the MVTX readout and clustering are operational. Additionally, this analysis technique provides an alternative diagnostic tool for detector alignment and vertex finding, both of which are critical components of the tracking system that will enable the entire physics program of sPHENIX.

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