

Design of the sPHENIX tracker

The latest results on jets and heavy flavor by the LHC experiments demonstrate the need to explore complementary measurements at RHIC, providing lower energies and lower initial virtualities. The proposed sPHENIX detector at RHIC will explore the quark-gluon plasma by measuring jets, b-tagged jets, jet correlations and the three upsilon states. The sPHENIX detector will cover full azimuth and $|\eta| < 1.1$. The former BaBar solenoid will provide a magnetic field of 1.5 T, while Electromagnetic and Hadronic Calorimeters will form the sPHENIX calorimeter system. Resolving the upsilon states, heavy-flavor tagging and high p_T particle tracking inside jets require tracking detectors with good momentum, precision vertexing and low fake rate. Monolithic Active Pixel Detector (MAPS), the Intermediate Silicon Tracker (INTT) and a GEM-based Time Projection Chamber (TPC) collectively will provide tracking in sPHENIX. Based on Geant4 simulations, this tracking system provides the required resolution of less than 2% up to 10 GeV momentum required to resolve the three Upsilon states.

An overview of the sPHENIX tracker design along with key performance measures will be shown in this poster.

Preferred Track

Future Experimental Facilities, Upgrades, and Instrumentation

Collaboration

sPHENIX

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Session Classification: Poster Session