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The sPHENIX MAPS-based vertex detector

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The sPHENIX detector at BNL's Relativistic Heavy Ion Collider (RHIC) will study QGP properties with heavy bottom quark jets (B-jets) produced in high-energy heavy ion collisions. B-jets are expected to offer a unique set of observables due to the large bottom quark mass, but need to be measured across an unexplored kinematic regime, particularly at low p_T where the expected mass-dependence effects are large but the underlying backgrounds are also high. We will use a three-layer Monolithic-Active-Pixel-Sensor (MAPS) based vertex detector, originally developed for the ALICE ITS upgrade, to identify the signal and suppress the background. The MVTX will serve as the innermost tracking system of sPHENIX, covering 2 cm to 4 cm radially and a pseudorapidity range of $|\eta| < 1.1$. The very fine $27 \mu\text{m} \times 29 \mu\text{m}$ pixels allow us to identify B-decay secondary vertices and B-jets in heavy ion collisions with high efficiency and high purity. In this presentation, we show the current status of R&D efforts towards custom readout and mechanical systems to integrate the MVTX detector into the sPHENIX system.

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