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Implementation of ACTS into sPHENIX Track Reconstruction

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sPHENIX is a high energy nuclear physics experiment under construction at the Relativistic Heavy Ion Collider at Brookhaven National Laboratory. The primary physics goals of sPHENIX are to measure jets, their substructure, and the upsilon resonances in $p+p$, p+Au, and Au+Au collisions. sPHENIX will collect approximately 200 PB of data over three run periods utilizing a finite-sized computing center; thus, performing track reconstruction in a timely manner is a challenge due to the high occupancy of heavy ion collisions. To achieve the goal of reconstructing tracks with high efficiency and within a 5 second per event computational budget, the sPHENIX experiment has recently implemented the A Common Tracking Software (ACTS) track reconstruction toolkit. This paper reports the performance status of ACTS as the default track fitting tool within sPHENIX, including discussion of the first implementation of a TPC geometry within ACTS.

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