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The sPHENIX TPC

The sPHENIX detector, designed to precisely measure jets, jet correlations, and dilepton pairs at RHIC energies, will begin data taking in 2023. With these key measurements in mind, sPHENIX will employ a compact TPC covering $20\text{cm} < r < 78\text{ cm}$ and $|\eta| < 1.1$ as the central tracker. Utilizing an optimized Ne-CF₄ gas mixture, zigzag readout pads, a 1.4T solenoid, and a modified SAMPA chip for streaming readout, the TPC will provide a position resolution sufficient for measuring target observables in a high event rate environment. The TPC, due to its low radiation length and good position resolution, could constitute a mid-rapidity tracking component in a day-one EIC detector. The design of the TPC will be discussed, as well as test beam data and applicability to the EIC.

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