

# A Compact TPC for the sPHENIX Experiment

*Wednesday, May 26, 2021 6:42 AM (18 minutes)*

The sPHENIX detector to be installed at RHIC in 2022 is designed to precisely measure jets, jet correlations, and dilepton pairs in heavy-ion collisions. With these 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-CF<sub>4</sub> 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 sPHENIX TPC, with some modifications, could be a mid-rapidity tracking component in a day-one Electron-Ion Collider (EIC) detector. The design of the TPC will be discussed, as well as test beam data and applicability to the EIC.

## TIPP2020 abstract resubmission?

Yes, this would have been presented at TIPP2020.

## Funding information

**Primary author:** KLEST, Henry (Stony Brook University)

**Co-authors:** Dr HEMMICK, Thomas (Stony Brook University); Dr DEHMELT, Klaus (Stony Brook University); Dr GARG, Prakhhar (Stony Brook University); Dr CORLISS, Ross (Stony Brook University)

**Presenter:** KLEST, Henry (Stony Brook University)

**Session Classification:** Sensors: Gaseous Detectors

**Track Classification:** Sensors: Sensors: Gaseous Detectors