

small-Strip Thin Gap Chamber as a STAR forward tracker

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The STAR experiment at the Relativistic Heavy Ion Collider has undergone comprehensive detector upgrades in the forward region, providing precise identification of pions, photons, electrons, jets and as well as hadrons in the pseudorapidity region 2.5 to 4. In this contribution we focus on the small-Strip Thin Gap Chamber (sTGC), a variant of Multi-Wire Proportional Counters, which provides better spatial resolution at high particle flux regions. Four planes of sTGC detectors, each with four quadrants were installed. Each quadrant is a double sided chamber with diagonal stripes that give x , y , u in each plane, and provide position resolution $< 200 \mu\text{m}$. For the optimum operation the chambers require a n -Pentane and CO_2 gas-mixture by volume 45%:55% at very low pressure and flow. A gas system with its associated safety system was built to fulfill the above requirement. The readout is based on ATLAS VMM chips developed for the ATLAS sTGC chambers. In this talk we will present installation, commissioning and performance of the detector during the RHIC 2022 500 GeV $p+p$ run.