

The STAR Forward Rapidity Upgrade

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The STAR experiment is planning to upgrade the forward rapidity region ($2.5 < \eta < 4.5$) to enable novel measurements in pp, pA and AA collisions. The STAR forward upgrade is motivated by exploration of cold QCD physics in the very high and low regions of x . But it is specifically noted that the forward upgrade will also provide new detector capabilities at RHIC and STAR to explore the longitudinal structure of the initial state and the temperature dependent transport properties of matter in relativistic heavy ion collisions.

The current design of the forward upgrade consists of a Calorimeter System (FCS) integrating the refurbished PHENIX sampling electromagnetic Calorimeter and a hadronic calorimeter made of a sandwich iron scintillator plate sampling type. In addition to the FCS, a Forward Tracking System (FTS) is also proposed. The FTS must be capable of discriminating hadron charge sign in pp and pA collisions. In heavy ion collisions, it should be able to measure transverse momentum of charged particles in the range of $0.2 < p_T < 2$ GeV/c with 20-30% momentum resolution. The FTS-system combines 3 Silicon mini-strip disks and 4 Small-Strip Thin Gap Chamber (sTGC) wheels ala ATLAS. The talk will highlight the physics opportunities enabled by these upgrades.

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