

The ATLAS ITk Strip Detector for the LHC Phase-II Upgrade

Wednesday, 14 August 2024 15:30 (15 minutes)

The Inner Tracker (ITk) of the ATLAS phase-II upgrade is aimed for function in future HL-LHC, where the particle density and radiation levels will exceed current level by a factor of ten. An all-silicon design was adopted to be faster and more spatial segmented, which requires much greater power for the front-end system. The new design is also targeting higher irradiation resistance, while the radiation length of the ITk remains reasonably low. The upgraded ITk will consist of multiple layers of silicon detectors. The silicon pixel detectors will be installed on innermost layers, while the silicon strip detectors on outer layers. This contribution focus on the strip region of the ITk. The central region (barrel) consists of 4 cylindrical shaped layers, composed of rectangular short strip (~2.5 cm) and long strip (~5 cm) sensors. The forwards region (end-cap) consists of 6 disk shaped layers per side, which covered by trapezoidal shaped strip sensors of various lengths and strip pitches.

After the completion of final design reviews, the collaboration initialized a massive prototyping program and several pre-production phases before commence the production. We will summarize the current status of ITk upgrade pre-production and production on detector components, and an emphasis on detector module assembly procedures, as well as QA/QC criteria.

Primary author: CAI, Mengke

Presenter: CAI, Mengke

Session Classification: 分会场五

Track Classification: 粒子物理实验技术