

Noise and performance tests results of the PS modules for the phase-2 CMS outer tracker

Monday 4 September 2023 10:30 (20 minutes)

The CMS Outer Tracker phase-2 upgrade is conditioned by the planned high-luminosity LHC (HL-LHC) project. The high radiation levels and the large pileup require a high granularity and low mass detector and the capability to handle high data rates. The OT modules will provide hit information to the Level 1 Trigger to form track segments, which allows to keep the trigger rates at a sustainable level. The CMS OT uses silicon pixel-strip sensors (PS) modules, which contain a silicon strip sensor and a silicon macro-pixel sensor with an area of $(5 \times 10) \text{cm}^2$. The silicon strip and macro-pixel sensors are wire-bonded to two front-end hybrids (FEHs), interconnected with a power hybrid (POH) on one side and with an optical readout hybrid (ROH) on the opposite side. The rejection of low momentum tracks for the L1 track trigger is also performed in the FE electronics by locally correlating the signals (hits) from a pair of pixel-strip sensor (stubs). The performance tests for noise investigation of the PS modules are presented.

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Session Classification: Applications in Particle Physics

Track Classification: Applications in Particle Physics