

The CT-PPS tracking system with 3D pixel detectors

Wednesday 22 February 2017 11:10 (20 minutes)

The CMS-TOTEM Precision Proton Spectrometer (CT-PPS) project will add in the next months tracking and timing detectors in Roman pots (RP) positioned on either side of CMS, at about 210 m from the interaction point. CT-PPS allows the measurement of forward leading protons, opening the possibility of detailed studies of diffractive physics and central exclusive production in standard LHC running conditions. The tracking system of the CT-PPS apparatus will consist of two detector stations per arm equipped with six 3D silicon pixel-sensor modules, each read out by six PSI46dig chips. 3D sensors have been chosen for their high radiation hardness and the possibility of a reduced inefficient area at the edge of the sensor toward the beam. Sensors have been designed and manufactured by CNM in double-sided technology, with not-completely passing-through columns and 200 um slim edges. The front-end electronics has been designed to fulfill the mechanical constraints of the RP and to be compatible as much as possible with the readout chain of the CMS pixel detector. The tracking system is currently under construction and testing. In this contribution the final design and the expected performance of the CT-PPS tracking system will be presented. A summary of the studies performed, before and after irradiation, on the 3D detectors produced for CT-PPS will be given.

TRACK

3D Sensors

Primary authors: CMS AND TOTEM COLLABORATIONS; Prof. SOLANO, Ada (Univ. of Torino and INFN)

Presenter: Prof. SOLANO, Ada (Univ. of Torino and INFN)

Session Classification: Session 9: 3D Sensors (2)