

The CT-PPS project

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The CMS-TOTEM Precision Proton Spectrometer allows the extension of the LHC physics program by detecting scattered protons in the very forward region of CMS. The detector includes tracking and timing stations installed along the beam pipe at ~ 210 m from the CMS interaction point on both sides. The tracking detector is presently constituted by one silicon strip and one silicon 3D pixel station per arm, ensuring a track resolution of $10 \mu\text{m}$ along the most interesting direction. The future goal is to replace the present strip stations with pixel ones in order to ensure better performance of multi-track event reconstruction. Each LHC arm is equipped with a timing station hosting three planes of diamond detectors plus one of Ultra-Fast Silicon Detector (UFSD) with a global timing resolution of a few tens of picoseconds. This constitutes the first application of UFSD in a high energy physics experiment. A large R&D effort is ongoing on this technology and on diamond detectors in order to reach the final goal of 10 ps target resolution. This contribution will describe the present status of the CT-PPS project, as well as the operational experience in the 2017 data taking.

Relevant topics

Forward physics at LHC, tracking detector, timing detector

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