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The CMS-TOTEM Precision Proton Spectrometer and first physics results

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The CMS-TOTEM PPS (Precision Proton Spectrometer) detector system consists of silicon tracking stations as well as timing detectors to measure both the position and direction of protons and their time-of-flight with high precision. They are located at around 200 m from the interaction point in the very forward region on both sides of the CMS experiment. PPS is built to study Central Exclusive Production (CEP) in proton-proton collisions at LHC, including the photon-photon production of W and Z boson pairs, high-mass diphoton and dilepton production, high- p_T jet production, as well as searches for anomalous couplings and new resonances.

The PPS detector has taken data at high luminosity while fully integrated to the CMS data acquisition system. The total data collected correspond to around 55 fb^{-1} during its first two years of operation. In this presentation the PPS operation, commissioning and performance are discussed.

For the first time, exclusive dilepton production at high masses has been observed in the CMS detector while one or two outgoing protons are measured in PPS using around 10 fb^{-1} of data accumulated in 2016 during high-luminosity LHC operation. These first results show a good understanding, calibration and alignment of the new PPS detectors. Preliminary results on the search for high-mass exclusive diphoton production and prospects for future analyses are also presented.

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