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Proton tagging with the CMS Precision Proton Spectrometer: detector performance, physics results, and short and long term perspectives

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The CMS Precision Proton Spectrometer consists of tracking and timing detectors placed close to the beam at about 200m from the interaction point. The goal of PPS is to measure the kinematic parameters of the protons scattered in interactions where at least one of them emerges intact. Silicon tracking detectors measure the momentum lost by the proton and diamond timing detectors measure its time of flight to reduce pileup contributions. The data collected during LHC Run2 correspond to around 100 /fb and are currently used in several analyses that study central exclusive production (CEP), including photon-photon production of W and Z boson pairs, high-mass photon and lepton pairs, high-pT jet production, as well as searches for anomalous couplings and new resonances. Meanwhile, new detectors are being built for LHC Run3.

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