

# The CMS Precision Proton Spectrometer in Run 3: upgrade and performance

*Saturday 20 July 2024 11:03 (18 minutes)*

The CMS Precision Proton Spectrometer is designed for studying Central Exclusive Production in pp collisions at the LHC. It consists of tracking and timing detectors to measure protons that escape along the LHC beam line after the interaction in CMS. Both tracking and timing systems underwent a substantial upgrade for Run 3. The tracking detector employs new single-sided 150 um-thick silicon 3D pixel sensors, read out with the PROC600 chip. An innovative mechanical solution was adopted to mitigate the radiation effects caused by the non-uniform irradiation of the readout chip, allowing for moving the detectors during beam downtimes. The time-of-flight measurement system uses 500 um-thick single-crystal CVD diamond sensors in double-diamond configuration and was upgraded with the aim of improving the radiation tolerance and obtaining a time resolution of less than 30 ps. In this contribution the new apparatuses installed for Run 3 and their preliminary performance will be presented.

## Alternate track

### I read the instructions above

Yes

**Authors:** BELLORA, Andrea (Universita e INFN Torino (IT)); CMS

**Presenter:** BELLORA, Andrea (Universita e INFN Torino (IT))

**Session Classification:** Operation, Performance and Upgrade (incl. HL-LHC) of Present Detectors

**Track Classification:** 12. Operation, Performance and Upgrade (incl. HL-LHC) of Present Detectors