



# The CMS Precision Proton Spectrometer timing system: precision timing with scCVD diamond crystals

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The CMS PPS detector, operating at the LHC, makes use of timing detectors based on planar single crystal CVD diamond to measure the proton time-of-flight with high precision. The time information is used to reconstruct the longitudinal position of the proton interaction vertex and to suppress pile-up background.

A novel architecture with two diamond sensors read out in parallel by the same electronic channel had been used to enhance the timing performance of the detector.

The PPS timing detector has operated during LHC Run 2. In the poster you will find a description of the detector and its performance in Run 2. The timing system has been upgraded for Run 3, with the goal of reaching an ultimate timing resolution of better than 30 ps on protons in the TeV energy range.

