

Prospects for a precision timing upgrade of the CMS PbWO crystal electromagnetic calorimeter for the HL-LHC

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The upgrade of the Compact Muon Solenoid (CMS) crystal electromagnetic calorimeter (ECAL), which will operate at the High Luminosity Large Hadron Collider (HL-LHC), will achieve a timing resolution of around 30 ps for high energy photons and electrons. In this talk we will discuss the benefits of precision timing for the ECAL event reconstruction at HL-LHC. Simulation studies focused on the timing properties of PbWO₄ crystals, as well as the impact of the photosensors and the readout electronics on the timing performance, will be presented. Test beam studies intended to measure the timing performance of the PbWO₄ crystals with different photosensors and readout electronics will be shown.

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