

Current status of the CMS Inner Tracker upgrade for HL-LHC

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During the High Luminosity programme of the LHC collider (called HL-LHC), planned to start in 2030, the instantaneous luminosity will be increased from $\sim 2 \times 10^{34} \text{ cm}^{-2} \text{ s}^{-1}$ to an unprecedented figure of about $\sim 7.5 \times 10^{34} \text{ cm}^{-2} \text{ s}^{-1}$. This will allow the Compact Muon Solenoid (CMS) to collect up to $\sim 4000 \text{ fb}^{-1}$ of integrated luminosity over a decade.

However, in order to cope with the much higher pp-collisions rate, CMS will undergo an extensive improvement known as "Phase-2 upgrade": in particular, the silicon tracker system will be entirely replaced to comply with the extremely challenging experimental conditions.

This contribution will review the main upgrades of the CMS Inner Tracker and will present the most relevant design and technological choices. Moreover, the ongoing prototypes validation and the preparation for the large-scale production will be discussed.

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