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Upgrade of the CMS Tracker for the HL-LHC (12' + 3')

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The LHC machine is planning an upgrade program which will smoothly bring the luminosity at about 5*10^34cm-2s-1 in 2028, to possibly reach an integrated luminosity of 3000fb-1 by the end of 2037. This High Luminosity LHC scenario, HL-LHC, will require a preparation program of the LHC detectors known as Phase-2 upgrade. The current CMS Tracker, including both inner pixel and outer strip systems, is already running beyond design specifications and will not be able to survive HL-LHC radiation conditions. CMS will need a completely new device in order to fully exploit the high-demanding operating conditions and the delivered luminosity. The upgrade plan includes extending the pixel detector in the forward region from the current coverage of |\eta|<2.4 to 4, where up to ten disks will compose of the new forward pixel detector. Additionally, the new outer system should have also trigger capabilities. To achieve such goals, R&D activities are ongoing to explore options and develop solutions that would allow including tracking information at Level-1. The design choices for the CMS Tracker upgrades are discussed along with some highlights of the R&D activities.

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