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The CMS tracker upgrade for HL-LHC

The LHC machine is planning an upgrade program which will smoothly bring the luminosity to about $5 - 7.5 \times 10^{34}$Hz cm^{-2}, to possibly reach an integrated luminosity of $3000 - 4000$ fb^{-1} over about a decade. This High Luminosity LHC scenario, HL-LHC, starting in 2029, will require an upgrade program of the LHC detectors known as Phase-2 upgrade.
In order to fully exploit the delivered luminosity and to cope with the demanding operating conditions, the whole silicon tracking system will have to be replaced and substantially upgraded before starting the HL-LHC, a plan known as CMS Phase-2 upgrade.
Both the CMS inner tracker (IT) detector and the outer tracker (OT) will be replaced and the new detector will feature increased radiation hardness, higher granularity and capability to handle larger data rate. While the IT electronics will handle a longer trigger latency, a key upgrade of the OT detector is to incorporate the identification of charged particle trajectories in the hardware-based (L1) trigger system. A 40 MHz silicon-based track trigger on the scale of the CMS detector has never before been built.
The design choices for the Tracker upgrades are discussed along with some highlights on technological approaches and latest results on the system testing of the prototypes. Recent L1 track trigger developments will be presented as well.

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