Upgrade of the CMS pixel tracker

The CMS pixel detector is a tracking device located closest to the interaction point. The present detector was designed for a maximum luminosity of 1×1034 cm-2s-1. Following the Phase 1 upgrade of the LHC, the peak luminosity is foreseen to reach 2×1034 cm-2s-1. Due to the radiation damage and significant data losses in the readout chip, the present pixel system must be replaced by a new one in order to maintain the excellent tracking and physics performance of the detector. The main new features of the upgraded pixel detector would be ultra-light mechanical design with four barrel layers and three end-cap disks, digital readout chip with higher rate capability and new cooling system. These design improvements, along with results of simulation studies for the expected performance of the new pixel detector, and current status of the upgrade efforts will be presented.

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