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CMS pixel detector upgrade

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The present Compact Muon Solenoid silicon pixel tracking system has been designed for a peak luminosity of $10^{34} \text{ cm}^{-2} \text{ s}^{-1}$ and total dose corresponding to two years of the Large Hadron Collider (LHC) operation. With the steady increase of the luminosity expected at the LHC, a new pixel detector with four barrel layers and three endcap disks is being designed. We will present the key points of the design: the new geometry, which minimizes the material budget and increases the tracking points, and the development of a fast digital readout architecture, which ensures readout efficiency even at high rate. The expected performances for tracking and vertexing of the new pixel detector are also addressed.

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