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CMS Pixel Detector Upgrade for HL-LHC

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To meet the experimental challenges and reach the physics potential of the High Luminosity LHC (HL-LHC), the CMS experiment will be replacing its current pixel detector with new technology and designs. The upgrade plan includes extending the inner pixel detector in the forward region from the current coverage of $|\eta| < 2.4$ to 4, and adopting small-pitch pixel sensors and next-generation electronic read-out. This talk reviews the objective and status of the pixel detector upgrade. Studies in simulation, from design optimization, detector modeling, and performance estimation, will be the focus of this talk. Finally, potential physics benefits from the upgrade are discussed.

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