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The Phase-1 upgrade of the CMS silicon pixel detector

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In 2017 the current CMS pixel detector will be replaced with an upgraded version due to the following reasons: increased luminosity at reduced bunch spacing (from $7 \times 10^{33} \text{ cm}^{-2} \text{ s}^{-1}$ at 50 ns bunch spacing to $2 \times 10^{34} \text{ cm}^{-2} \text{ s}^{-1}$ at 25 ns bunch spacing) in the LHC and radiation damage effects that will significantly degrade the present detector. The new upgraded detector will have higher efficiency and lower mass with four barrel layer and three forward/backward disks to provide higher hit pixel coverage out to pseudorapidities of ± 2.5 . In this talk we will give an overview on the Pixel upgrade project and expected performances, with focus on the barrel detector design and status of construction and qualification.

Summary

The talk is a presentation of the Pixel Tracker design and the production plans for the 3rd layer to be built by the italian consortium of the CMS tracker collaboration.

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