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CMS Phase-1 Pixel Detector: Layer 1 Issues and Solutions

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The first CMS pixel detector performed very well. Nevertheless it showed inefficiencies at high data rates when operated at luminosities above the planned LHC value of 10^{34} . Therefore it was decided to replace it with an improved version, the so called "phase-1" detector. It was constructed in 2013-2016 and installed in early 2017, during the LHC extended winter shutdown. The overall performance of the detector has been good and it delivered high quality data in the 2017-18 period. However some problem appeared, especially during the initial running period.

This talk will present the problems encountered and the ways in which they were resolved. It will explain how changes in the detector operation minimized the negative impact caused by these problems.

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