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## TBC Young Scientist Forum : Expected performance of the upgraded phase 1 pixel detector of CMS

The current silicon pixel detector is the innermost component of the CMS tracking system. Based on the precise measurement of up to three unambiguous space points, it allows an effective pattern recognition even in the multiple track environment near the interaction point. With the upgrade of the LHC accelerators, the luminosity and pile-up will surpass the original design goal of  $1 \times 10^{34} \text{ cm}^{-2} \text{ s}^{-1}$  by at least a factor of 2. The current pixel detector in CMS was not designed to perform effectively in such collision conditions and the tracking performance and the physics program of CMS would suffer as a result. The current pixel tracker will be replaced with a new high efficiency and low mass detector during the end of year technical stop which lasts from December in 2016 to May in 2017. The new detector is composed of four barrel layers and three forward/backward disks to provide four-hit pixel coverage out to pseudorapidities of  $\pm 2.5$ . In this talk I will describe the design and system testing of the upgraded pixel detector. I will also discuss the expected improvements in performance.

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