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Performance of prototype modules of CMS outer tracker for HL-LHC in test beams

The LHC will enter into its high luminosity phase(HL- LHC), operating at a luminosity of $5-7.5\times10^{34}cm^{-2}s^{-1}$ starting from 2026. To allow CMS experiment to operate efficiently, the current silicon tracker must be replaced as it will be heavily irradiated during current LHC operations and its performance will degrade. The new silicon tracker will be radiation hard to operate over the 3000 fb^{-1} data taking foreseen for the HL-LHC period. The new tracker will be made out of specially designed detector modules with stacked sensors read out by front-end chips called CMS Binary Chip\,(CBC). The CBC will be able to correlate hits in the stacked sensors and build a short track segment called stub. The stub information will be used in the Level-1 trigger to select high p_T tracks. The performance of the 2-Strip\,(2S) modules of the proposed outer tracker in test beams will be presented.

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