

Design and prototype performance of Macro-Pixel Sub-Assemblies for the CMS Outer Tracker upgrade

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The CMS silicon tracker will be replaced for the HL-LHC run of the experiment during LS3. The outer part of the new tracker is called Outer Tracker and consists of six barrel layers and endcap disks. Two types of modules have been designed, 2S modules (made up of two strip sensors) and PS modules (made of one strip, one macro-pixel sensor). The macro-pixel part of the PS module is called Macro-Pixel Sub-Assembly, or MaPSA. We will present the design of the MaPSA and show results from an extensive prototyping phase with multiple bump-bonding vendors. Plans for production will also be discussed.

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