

Abstract Submitted
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Characterization of pixel planar sensors for the inner tracker system of the phase 2 CMS detector¹ ALVARO GUERRERO LAOS, University of Puerto Rico at Mayaguez, CMS COLLABORATION — This talk will present the performance of silicon pixel sensors designed for the high-luminosity run of the Large Hadron Collider (HL-LHC). The HL-LHC is expected to operate at a peak instantaneous luminosity of $7.5 \times 10^{34} \text{ cm}^{-2} \text{ s}^{-1}$, resulting in a total fluence of $2.3 \times 10^{16} \text{ n_eq/cm}^2$ at the innermost layer of the pixel tracker, in center of the CMS detector. The “Phase-2” upgrade of the pixel detector must separate particle tracks in extremely dense collision debris: 140-200 collisions per bunch crossing. These conditions require thin, highly granular sensor components and readout chips that are radiation-tolerant, fast, and efficient. We tested prototype planar pixel sensors of 50 μm x 50 μm pitch and 150 μm thickness at the Fermilab Test Beam Facility (FTBF), and measured efficiency around 99% and resolution as good as 7.5 μm

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