



Contribution ID: 14

Type: **Short Talk (5')**

Testbeam results of 3D silicon sensors for the Inner Tracker system of the Phase-2 CMS detector.

Wednesday 1 December 2021 10:30 (5 minutes)

This presentation describes the test beam studies of 3D silicon sensors (pitch $50 \times 50 \mu\text{m}^2$) exposed to a 120 GeV proton beam at the Fermilab Test Beam Facility. We show the pixel efficiency, cluster size and hit resolution before and after irradiation. The 3D silicon sensors are considered for the innermost layers of the Inner Tracker (IT) of the Phase-2 upgrade of CMS Detector. This detector 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 $2.3 \times 10^{16} \text{ neq/cm}^2$ at the innermost layer of the IT, in center of the CMS detector. The IT 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.

Author: AGUIRRE NARVAEZ, Alexis Javier (University of Puerto Rico (PR))

Presenter: AGUIRRE NARVAEZ, Alexis Javier (University of Puerto Rico (PR))

Session Classification: LHC

Track Classification: Beyond the standard model