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First characterisation of 3D pixel sensors irradiated at extreme fluences.

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During the last decade at the Large Hadron Collider, the 3D pixel sensors have been widely used as particle tracking detectors for several experiments such as the Insertable B-Layer (IBL), ATLAS Forward Proton (AFP) in ATLAS and the TOTal cross section, Elastic scattering and diffraction dissociation Measurement (TOTEM) in CMS.

In this talk, we present for the first time, the 3D pixel sensors irradiated with neutrons up to a fluence of $3 \times 10^{17} n_{eq}/cm^2$. TCT measurements and charge collection efficiency showed that the sensors remain operative despite the unprecedented levels of irradiation similar of those estimated in the Future Circular Collider (FCC).

Submission declaration

Original and unpublished

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