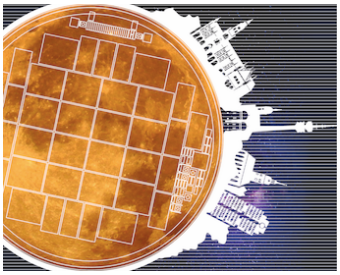

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Study of performances of 3D pixel devices from radioactive source measurements

During the $2023 - 2024$ shutdown, the Large Hadron Collider (LHC) will be upgraded to reach an instantaneous luminosity up to 7×10 $cm^{-2}s^{-1}$. This upgrade of the accelerator is called High-Luminosity LHC (HL-LHC). ATLAS and CMS tracking detectors will be replaced to meet the challenges of HL-LHC: an average of 200 pile-up events in every bunch crossing and an integrated luminosity of 3000 fb^{-1} over ten years. Italian groups are involved in the R&D on the design and production of 3D sensors with thickness in the range 100 to 200 μm, 5 μm diameter columns and smaller size pixel cells. The first pixel sensors produced by FBK in Trento have been bump-bonded by Leonardo to FE-I4 chips, the read-out electronics used in the new Pixel layer installed in ATLAS in 2014 (IBL).

This contribution is meant to be a poster reporting the laboratory measurements of 3D devices. The main purpose is to compare charge collection performance with two different radioactive sources (^{241}Am and ^{90}Sr) between IBL modules and the new FBK sensors, with the same pixel size of 50x250 μm^2 but different thickness. Furthermore an analysis of source scans for the FBK modules with different pixel cells, either 50x250 μm^2 or 50x50 μm^2, but same thickness, is performed. Both analysis compare for the same tuning threshold the results of ToT and clustering process.

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