

Development of Thin, Narrow-Pitch 3D Pixel Sensors for HL-LHC

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We report on the development of new 3D pixel sensors oriented to the Phase 2 Upgrades at the High-Luminosity LHC (HL-LHC), carried out within the framework of the INFN-FBK "Phase 2" R&D program.

These sensors have increased pixel granularity (e.g., 50×50 or $25 \times 100 \mu\text{m}^2$ pixel size), thinner active layer ($\sim 100 \mu\text{m}$) with columnar electrodes having narrower size ($\sim 5 \mu\text{m}$) and reduced spacing ($\sim 30 \mu\text{m}$), as required for high radiation hardness (up to a fluence of $2 \times 10^{16} \text{ neq cm}^{-2}$).

The talk will cover experimental results and simulations relevant to the sensors and test structures from the first batch fabricated at FBK on $6''\text{SiSi}$ DWB wafers, and technological and design aspects relevant to the fabrication of the second batch, funded by the AIDA2020 project, that is being launched.

TRACK

3D Sensors

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