

# Thin planar pixel sensor productions at MPP for the ATLAS ITk

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The ATLAS experiment will undergo around the year 2025 a replacement of the tracker system in view of the high luminosity phase of the LHC (HL-LHC) with a new 5-layer pixel system.

Thin n-in-p planar pixel sensors are promising candidates to instrument the new pixel system, thanks to the reduced contribution to the material budget and their high charge collection efficiency after irradiation. Different possible production processes for this kind of sensors will be presented. The performance of 100-150  $\mu\text{m}$  thick sensors interconnected to FE-I4 chips will be compared up to a fluence of  $10^{16}$   $1 \text{ MeV } n_{eq}/\text{cm}^2$  in terms of charge collection and power dissipation.

The design of new sensor productions, compatible with the RD53A chip, with a  $50 \times 50$  or  $25 \times 100 \mu\text{m}^2$  pixel cell size will be shown together with possible techniques to improve the electrical isolation between sensor and chip. A first insight of the performance of pixels with these cell sizes is obtained with FE-I4 compatible sensors with a modified geometry.

## TRACK

Planar Sensors

**Primary authors:** MACCHIOLO, Anna (Max-Planck-Institut für Physik (DE)); BEYER, Julien-Christopher (Max-Planck-Institut für Physik (DE)); NISIUS, Richard (Max-Planck-Institut für Physik (DE)); LA ROSA, Alessandro (Max-Planck-Institute for Physics (D)); SAVIC, Natascha (Max-Planck-Institut für Physik (DE))

**Presenter:** MACCHIOLO, Anna (Max-Planck-Institut für Physik (DE))

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