

# Characterization results of MAPS digital prototypes for the ALICE ITS3

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The three innermost layers of the ALICE Inner Tracking System (ITS2) will be replaced by a truly cylindrical tracker, the ITS3, to be ready for LHC Run 4 (2029-2032). The ITS3 will be composed of three layers, each made by two self-supporting, ultra-thin ( $\leq 50 \mu\text{m}$ ) flexible Monolithic Active Pixel silicon Sensors (MAPS) of large area ( $O(10 \times 26 \text{ cm}^2)$ ).

The final sensor will be realized using the 65 nm CMOS imaging process and stitching technology. Multiple small-scale test structures were included in the first production run Multiple Layer Reticle 1 (MLR1) to validate the 65 nm CMOS imaging technology. First large-scale stitched MAPS were included in the second production run Engineering Run 1 (ER1).

The pixel cell performance has been qualified on the MLR1 Digital Pixel Test Structures (DPTS) with laboratory and in-beam measurements. The large-area ( $1.4 \times 25.9 \text{ cm}^2$ ) ER1 Monolithic Stitched Sensor (MOSS) prototype has been used to prove the stitching principle and evaluate the detection efficiency and spatial resolution. This contribution will give an overview of the most recent results of the digital prototype tests.

## Collaboration

ALICE Experiment

## Role of Submitter

I am the presenter

**Primary author:** VILLANI, Anna (INFN - LNS)

**Presenter:** VILLANI, Anna (INFN - LNS)

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