



ALICE

# The Upgrade of the Alice Inner Tracking System

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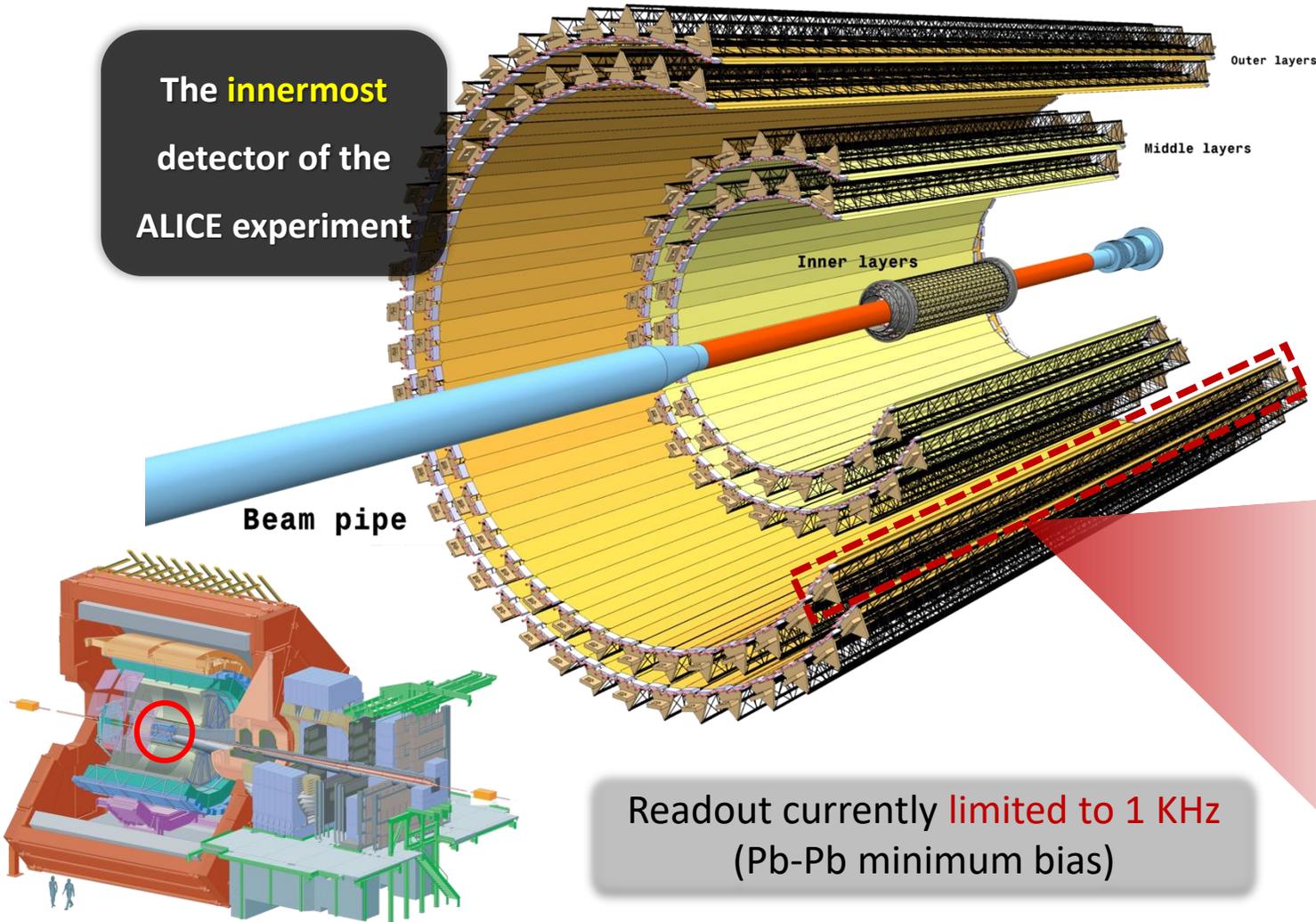


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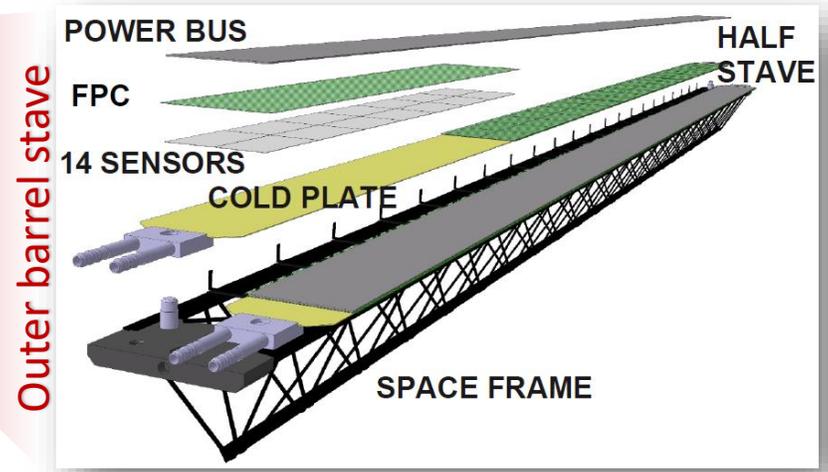
# New ITS layout (2019-2020)

The **innermost** detector of the ALICE experiment



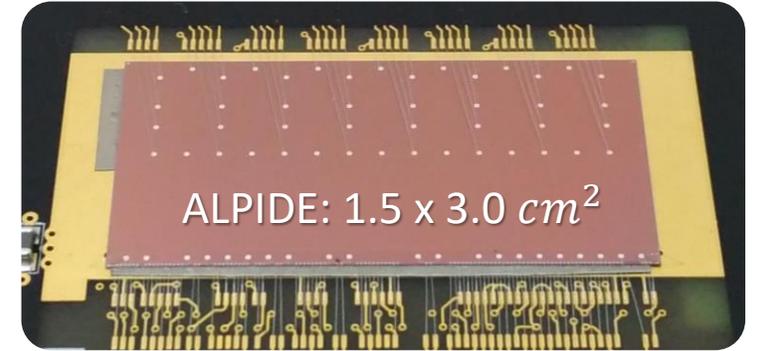
- **7 layers of Monolithic Active Pixel Sensors (MAPS) → ALPIDE**
  - 3 Inner Layers (Inner Barrel)
  - 2 Middle + 2 Outer layers (Outer Barrel)
- **Total active area:**  $\sim 10 \text{ m}^2$
- **$|\eta|$  coverage:**  $|\eta| < 1.22$
- **$r$  coverage:**  $22 - 400 \text{ mm}$

Readout currently **limited to 1 KHz** (Pb-Pb minimum bias)

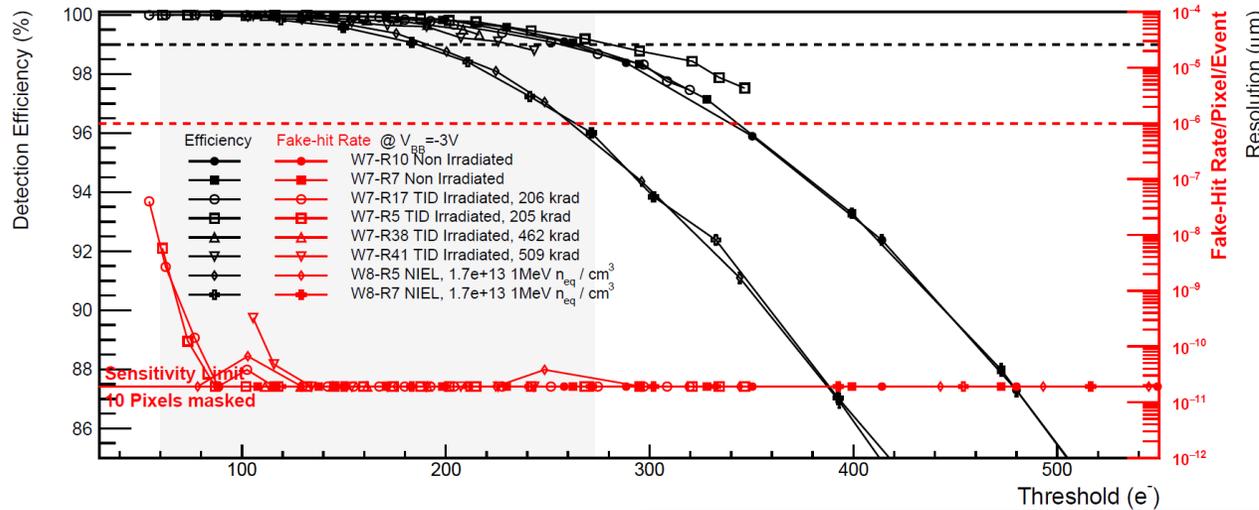


# ALPIDE chip characterization (final version: August 2016)

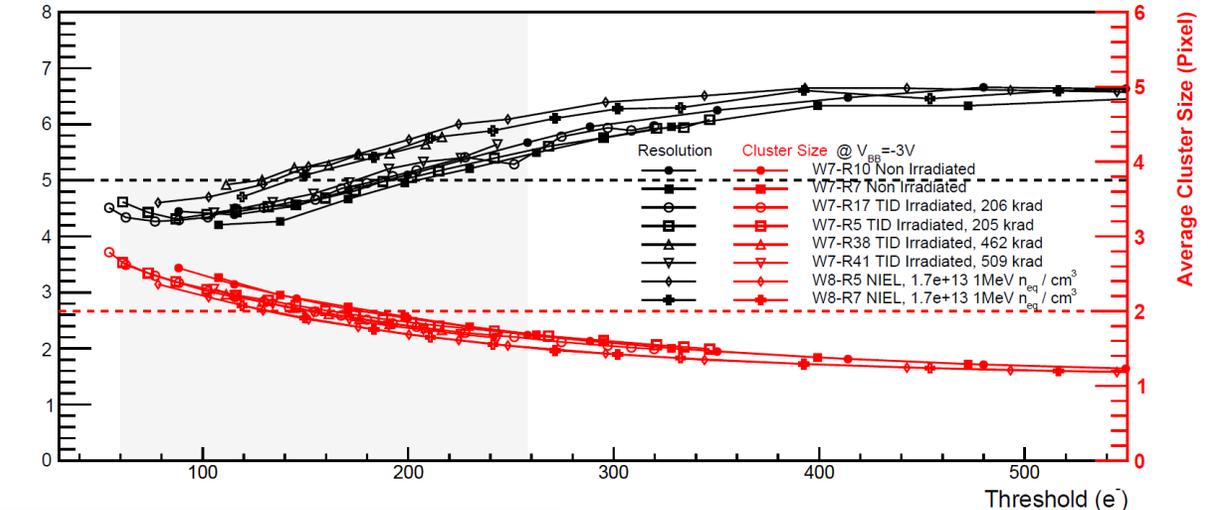
- Production Readiness Review in December 2016 → Ok! Production started
- Chip characteristics: 512x1024 pixels ( $\sim 27 \times 29 \mu\text{m}^2$  each), signal discriminated at pixel level, reverse back-bias to increase the depletion region in the sensitive silicon volume
- Full characterization performed: examples below



Efficiency and Fake-hit rate VS Threshold



Resolution and Average Cluster Size VS Threshold



Beam tests @CERN PS

## ... In the poster

- Details on the [Monolithic Active Pixel Sensors](#) that will be used for the new ITS
- Details on [Stave components](#)
- Examples of [expected physics performance](#) with the new ITS

*Thank you*