

# Characterization with test beams of ITk pixel detectors for the upgrade of the ATLAS Inner Detector

*Thursday 18 July 2024 20:40 (20 minutes)*

The ATLAS Inner Detector will be completely replaced with an all-silicon tracking detector (ITk) to cope with the new challenging conditions arising with the HL-LHC. The pixel detector will be located in the innermost part of the ITk and consists of five layers of detectors, with different thickness and sensor technology. n-in-p planar hybrid modules 150  $\mu\text{m}$  thick and 100  $\mu\text{m}$  thick will instrument the three outer layers, respectively. 3D sensor technology was chosen due to its radiation hardness to instrument the innermost layers. Additionally, the production of the ITk pixel detectors is distributed among four different vendors. As soon as pre-production modules and sensors of different types and produced by different vendors become available, they are being tested with test beams before and after irradiation to assess their performance at the fluence expected at the end of their life during HL-LHC. An overview of the current test beam results will be given.

## Alternate track

### I read the instructions above

Yes

**Authors:** ZHU, Junjie (University of Michigan (US)); TIAN, Yusong (Georg August Universitaet Goettingen (DE))

**Presenter:** TIAN, Yusong (Georg August Universitaet Goettingen (DE))

**Session Classification:** Poster Session 1

**Track Classification:** 12. Operation, Performance and Upgrade (incl. HL-LHC) of Present Detectors