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## Simulation of 3D Pixel Sensors in a Test Beam Setup Using Allpix<sup>2</sup>

Wednesday 7 May 2025 16:00 (25 minutes)

As part of my master's thesis, I have performed a simulation study of 3D silicon pixel sensors developed by SINTEF, for use in the ATLAS ITk upgrade at CERN. The aim of this work is to reproduce the conditions of a real test beam experiment, where sensors were exposed to a 120 GeV pion beam. The simulation setup replicates the EUTelescope beamline configuration and has been implemented using the Allpix<sup>2</sup> framework.

The study focuses on evaluating the detection efficiency and charge transport in the 3D sensor geometry. The simulated data has been analyzed and compared to real test beam measurements obtained under similar conditions.

Results so far show promising similarities between the simulation and experimental data, indicating that Allpix<sup>2</sup> can effectively model complex sensor behavior in a realistic beam environment. This comparison not only validates the simulation framework but also supports the continued development and testing of 3D pixel sensor technologies for future high-luminosity environments

## Will the talk be given in person or remotely?

In person

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