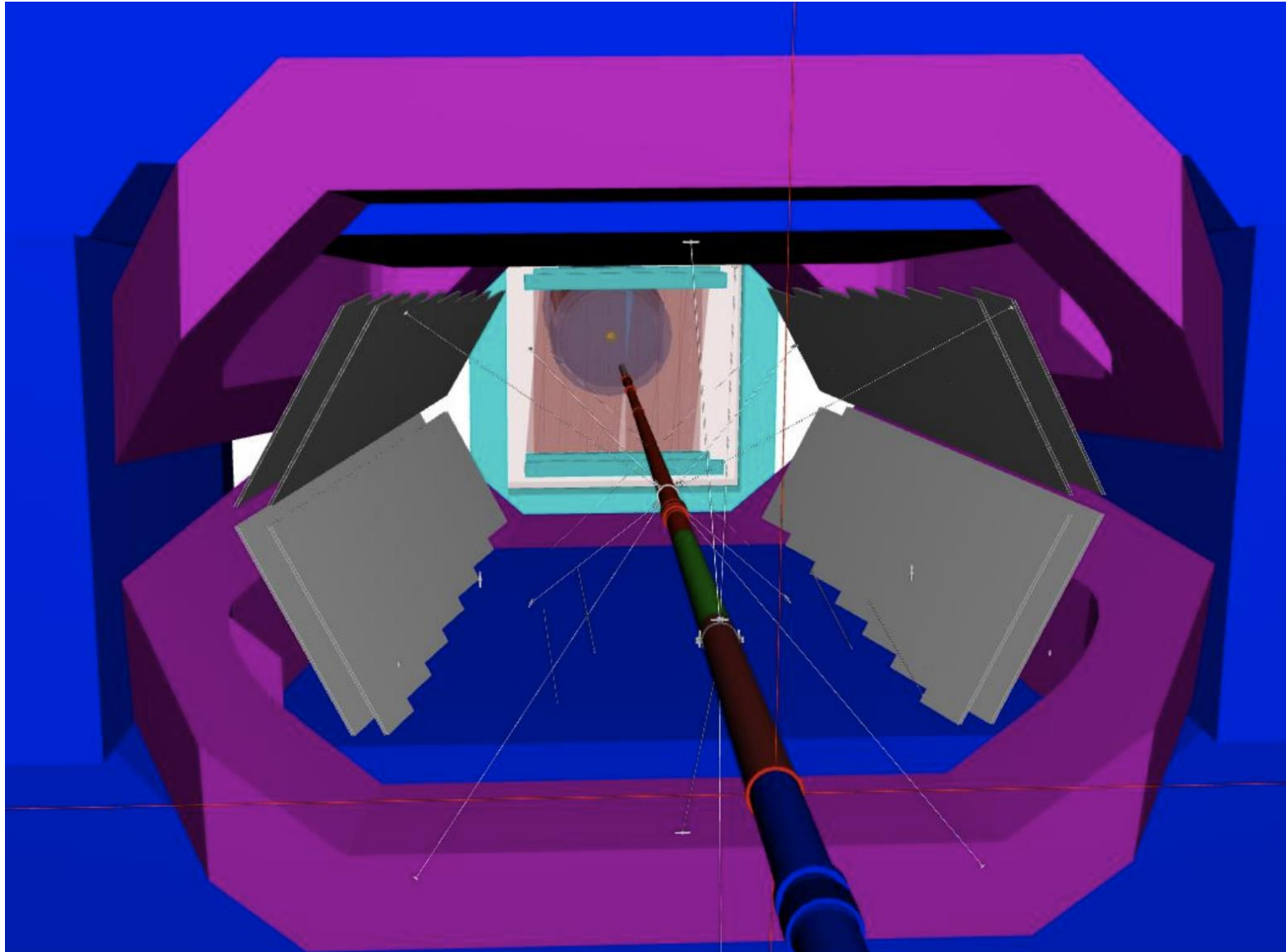


Status of the Magnet Station Simulation

Cesar da Silva: Los Alamos National Lab. Reporting the work from :

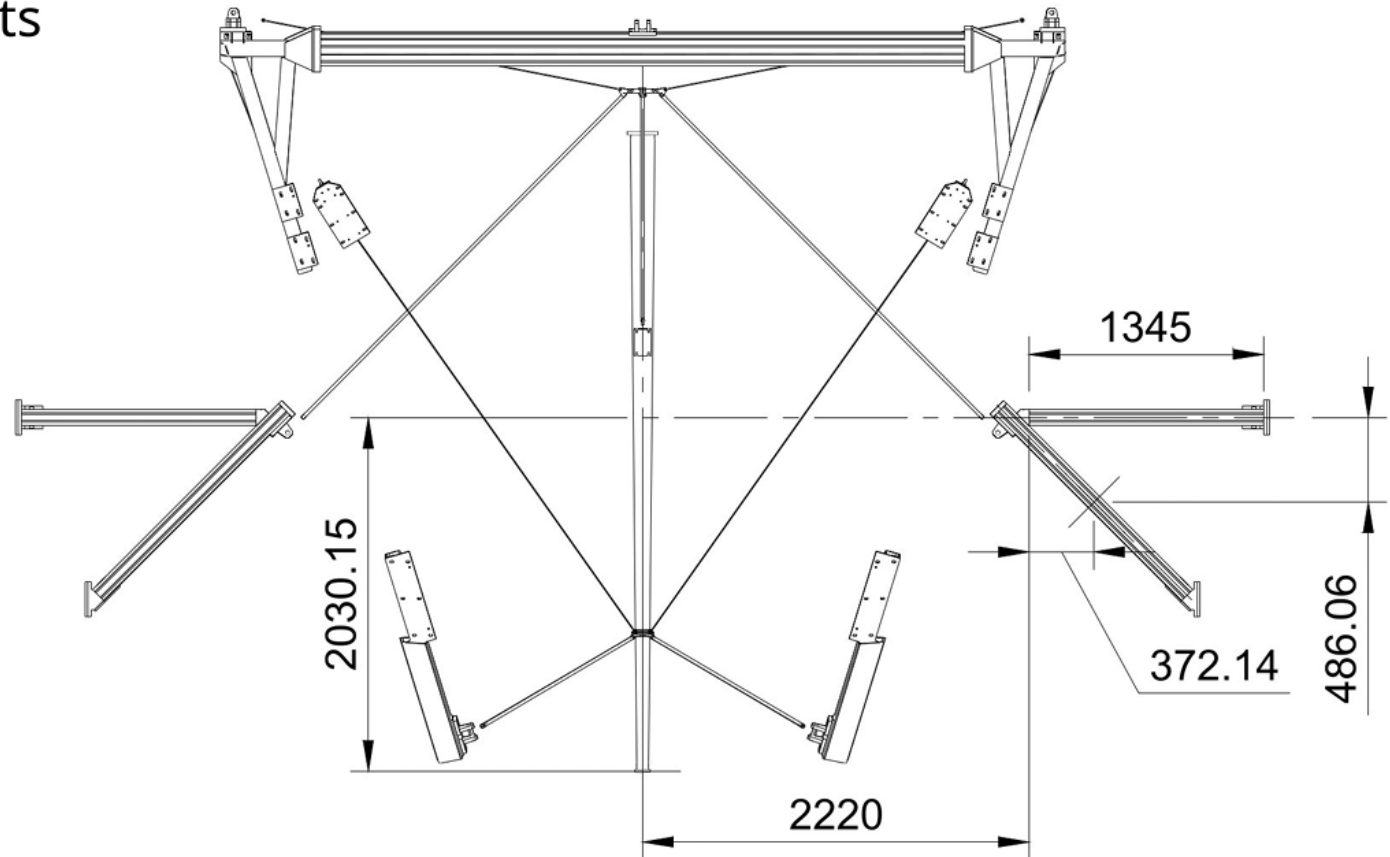
- Michal Kazanecki : IFJ (Krakow)
- Jakub Malczewski : IFJ (Krakow).

Magnet Station in DD4EP

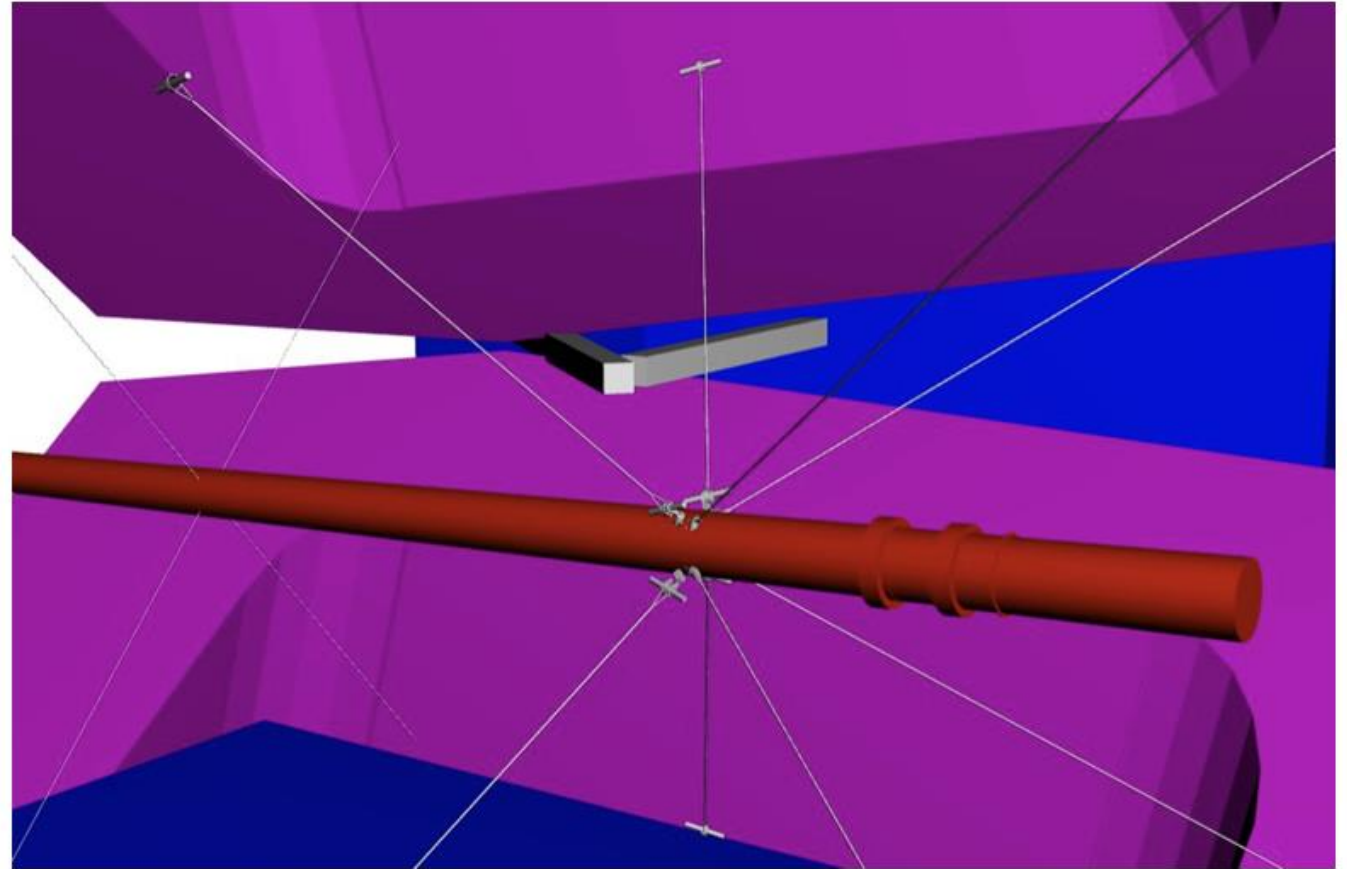
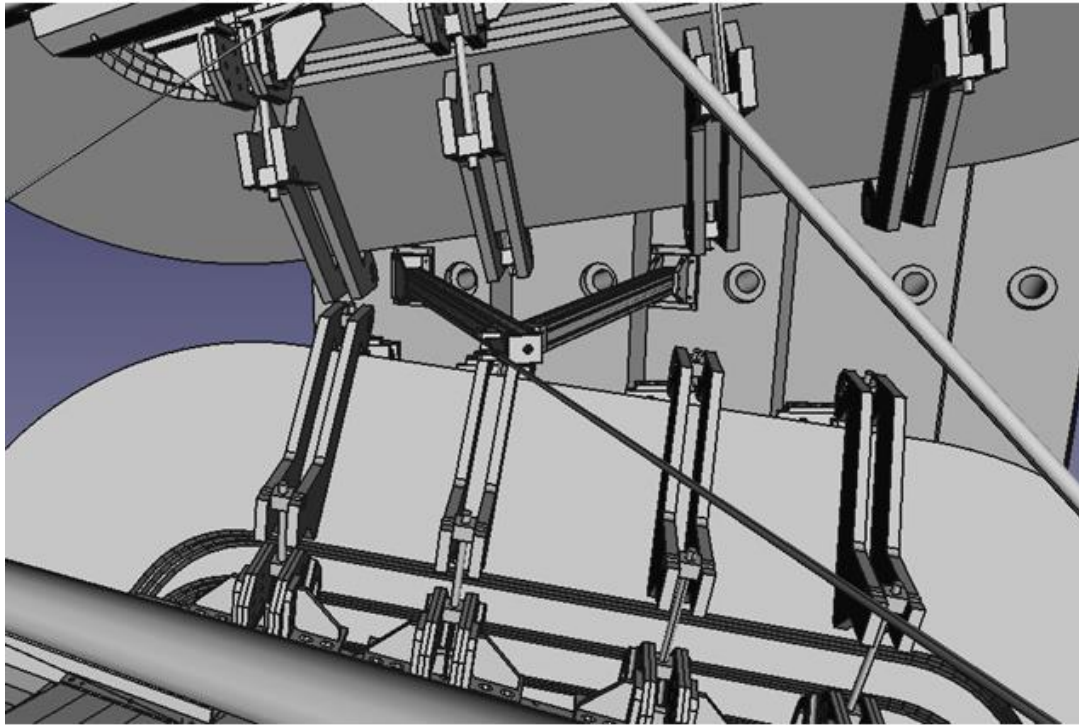


Support structure geometry

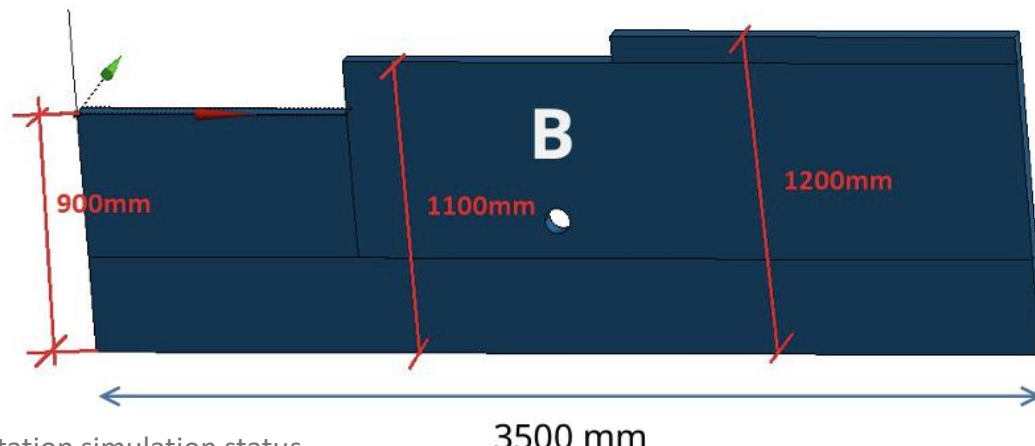
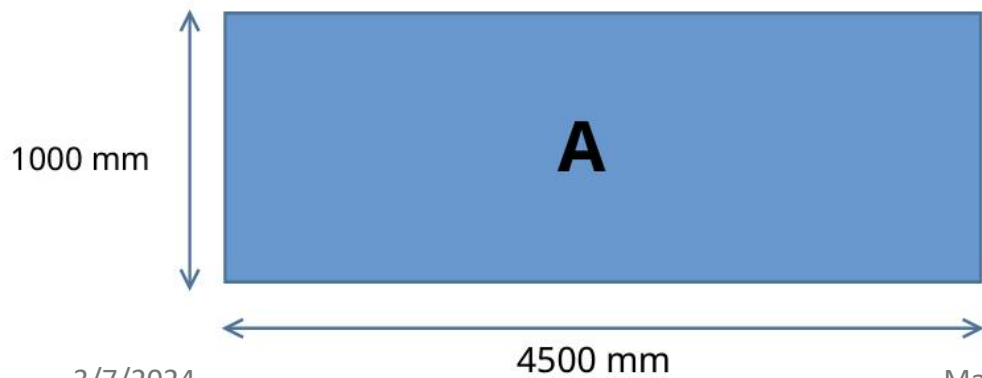
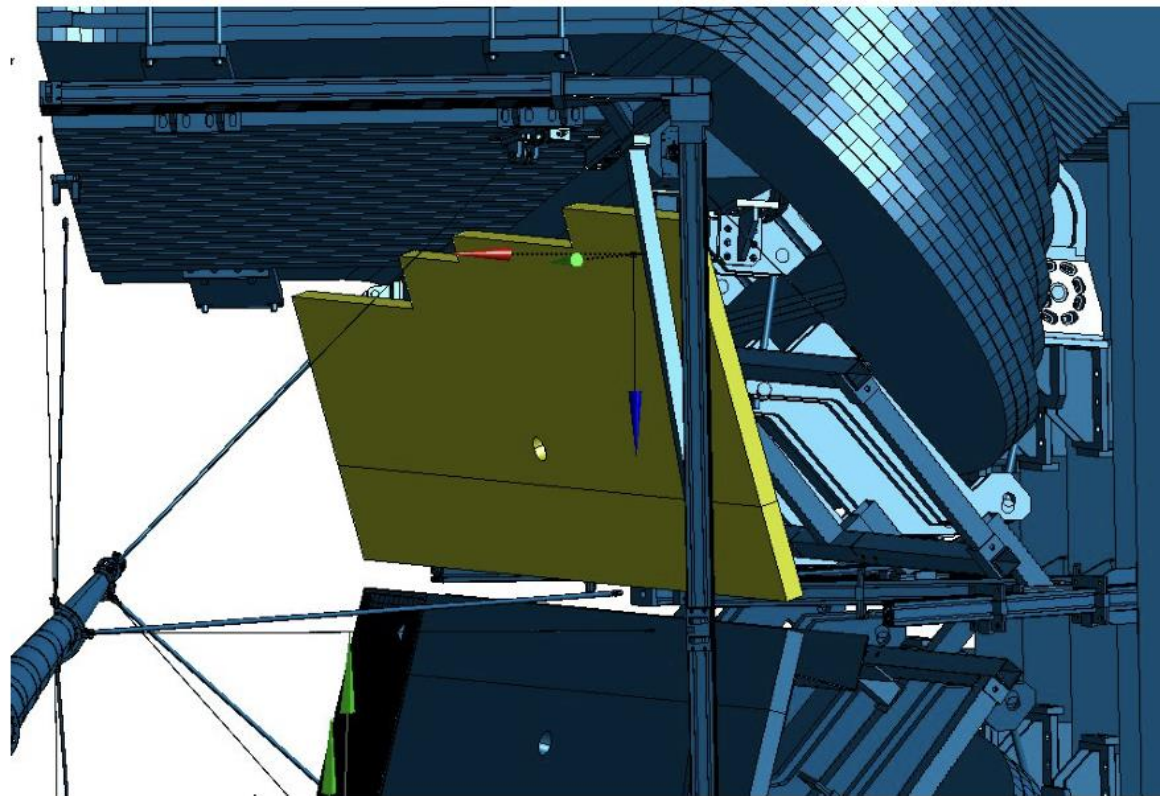
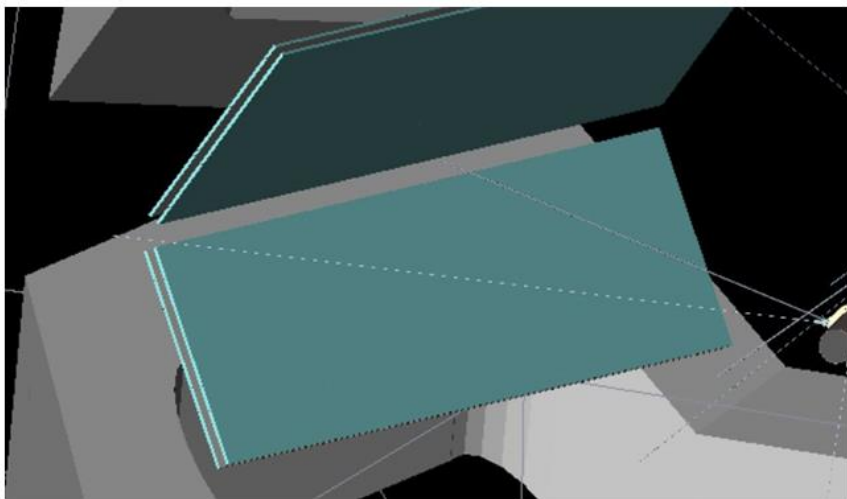
- Support structure geometry implementation
- Fibers geometry implementation
- Precise acceptance studies
- Code quality improvements



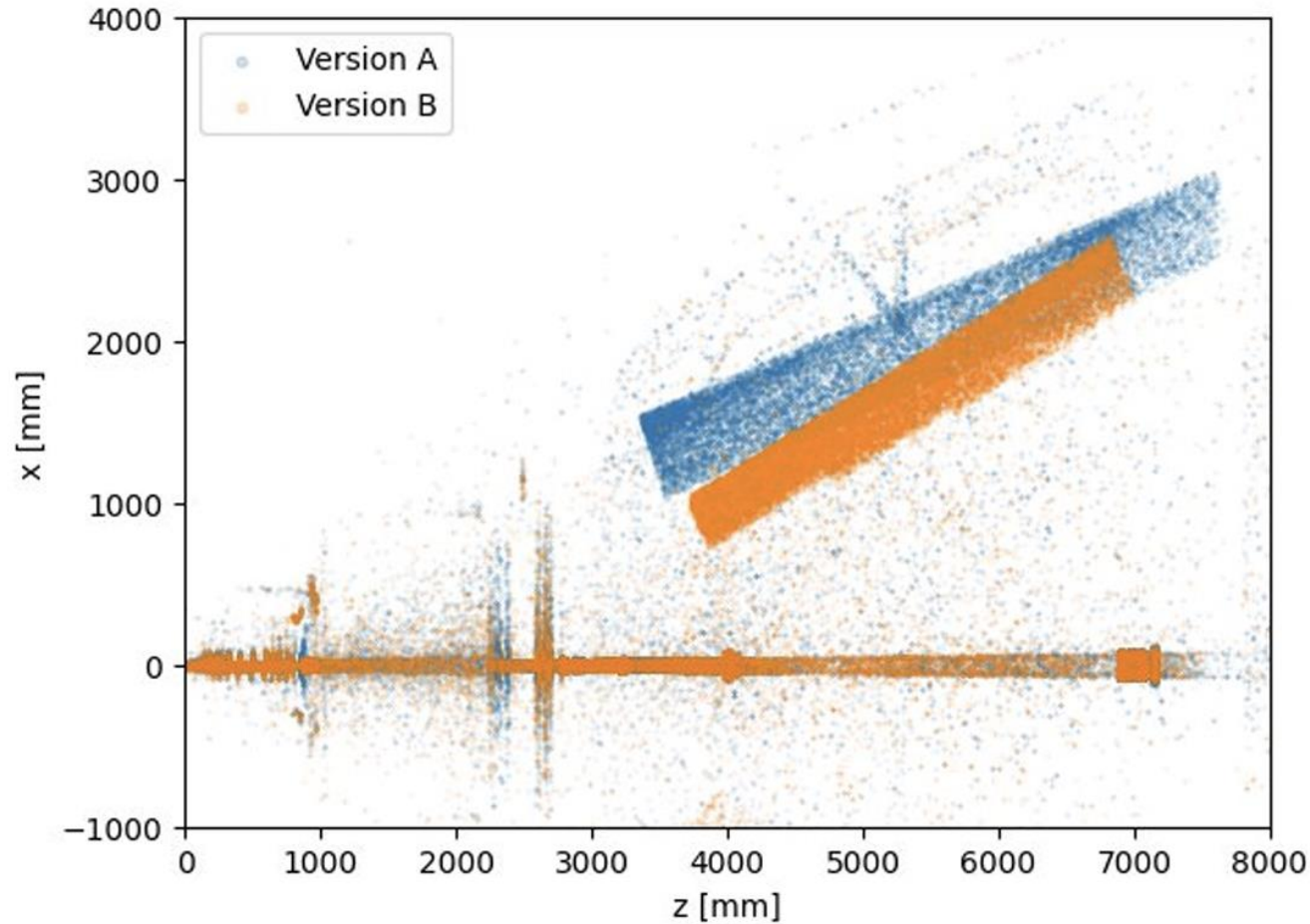
Simulation vs CAD model



Magnet Station geometry

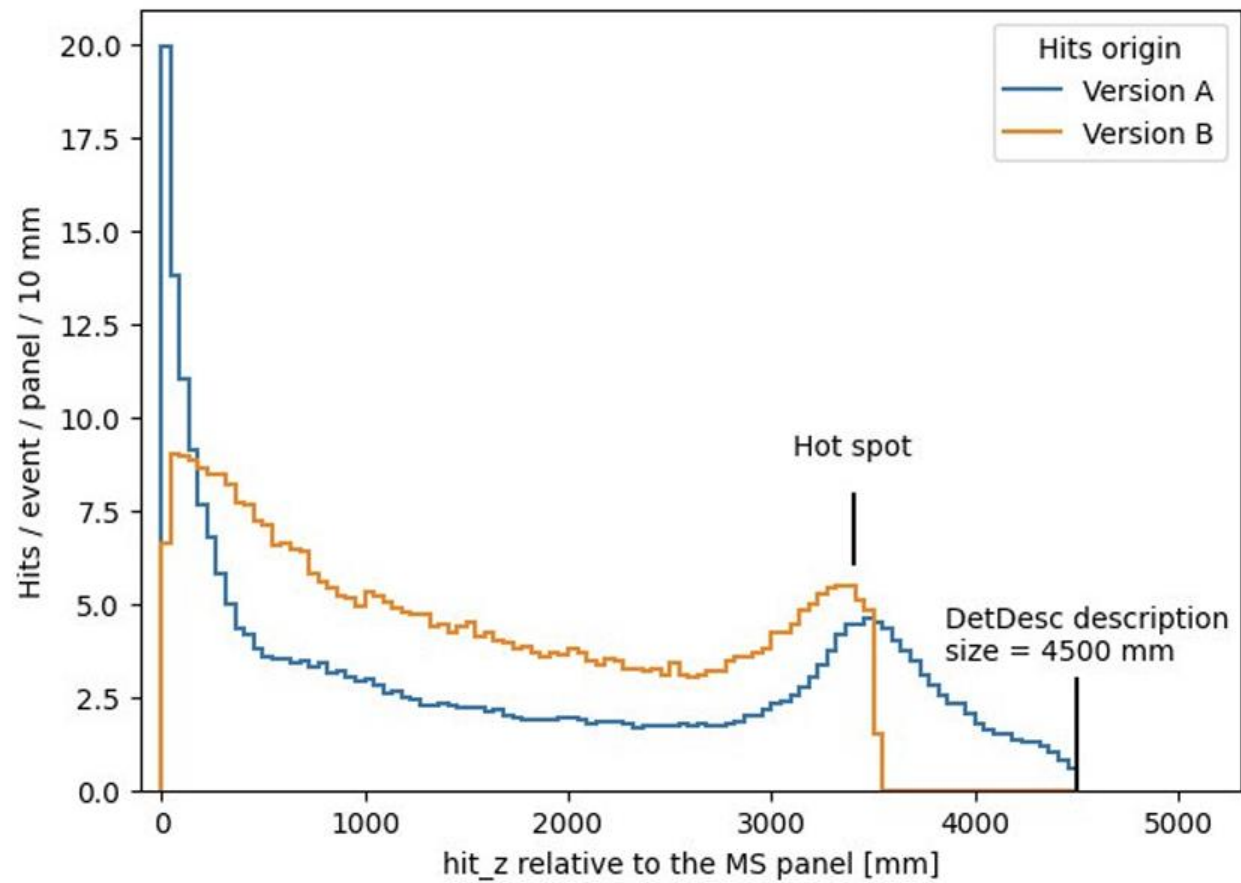


Magnet Station simulated hits

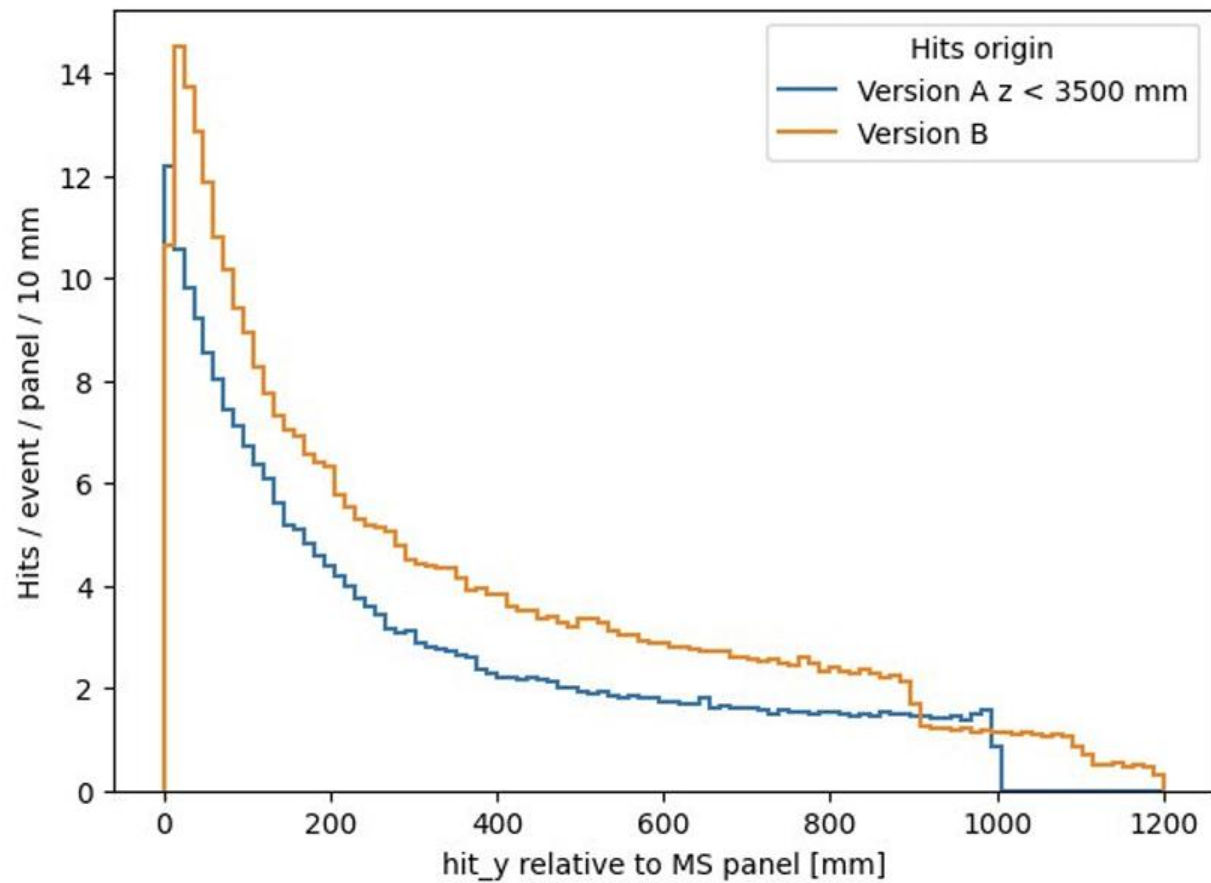


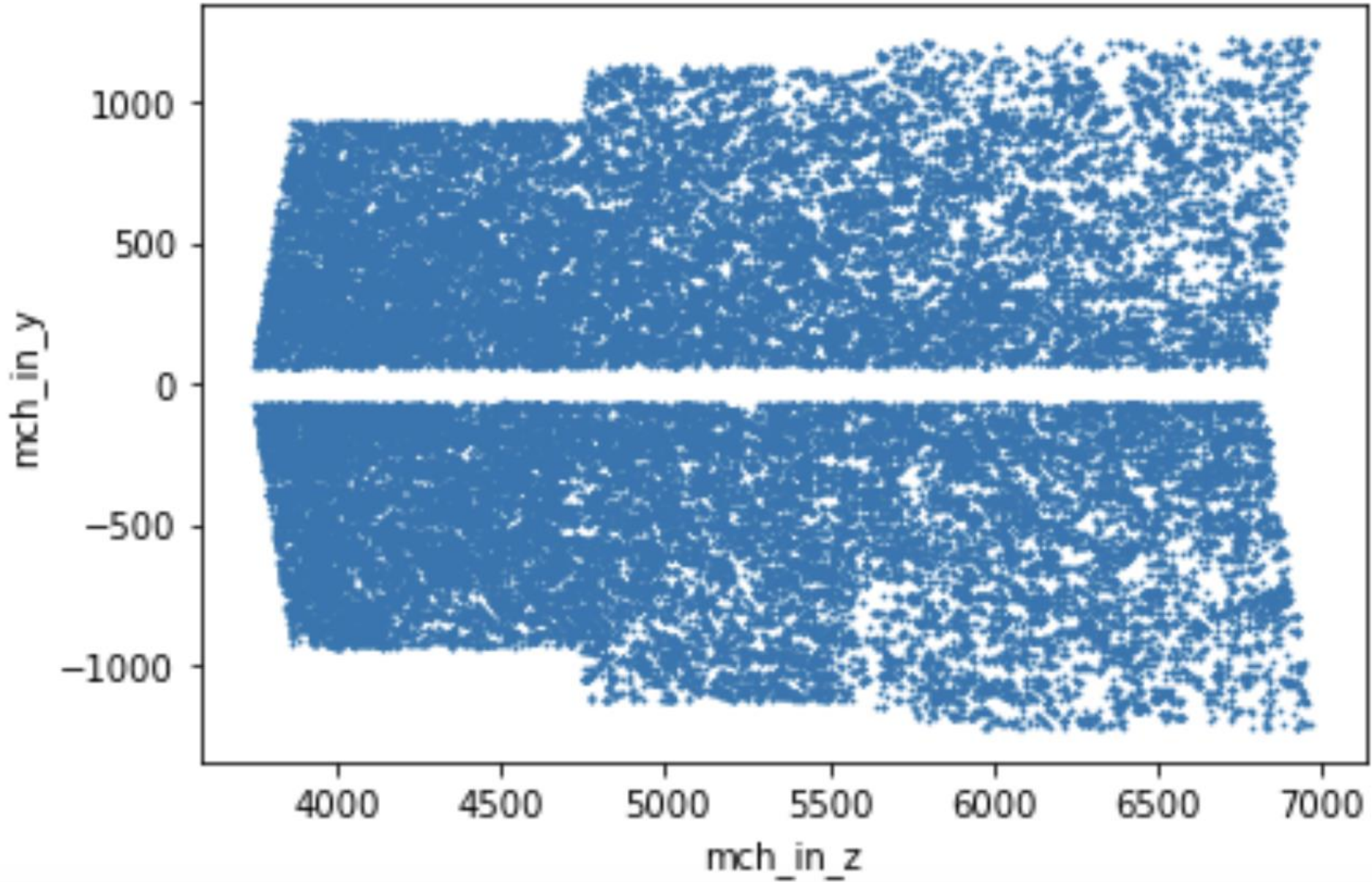
- Most recent changes on the angle of the panels in order to avoid any mechanical conflict with the spider web or internal magnet structure
- Every change in CAD has been monitored by simulation to study tracking and physics impact of the CAD model changes

Hits

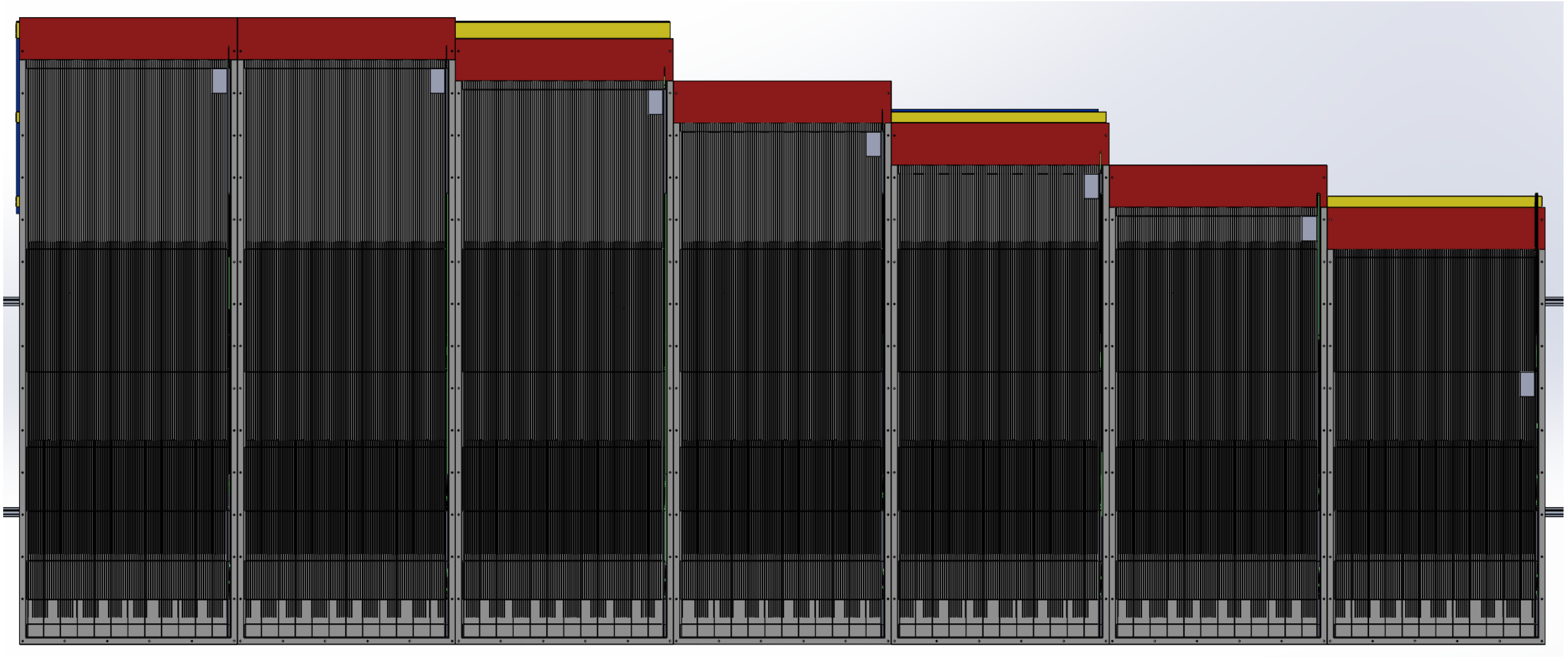


Hits





Segmentation in the CAD model



Ongoing work to implement bar segments in DD4HEP

3/7/2024

Magnet Station simulation status

Next Steps

- Fully functioning MS simulation in current LHCb framework
 - Detector in dd4hep : xml description and C++ builder
 - Gauss-on-Gaussino
- code is still maintained in a separate repository, but regularly checked against recent modifications in the core LHCb simulation
- Needs to decide if we want to keep the MS simulation this way or integrate with the general LHCb packaged. Important for UT studies
- MCHit packer requires a new class
- Digitalization : using private classes which convert hit information to bar index
- UT+VELO stepwise track projection to MS already coded as a private library