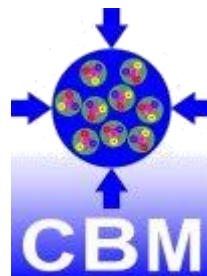


System Integration MVD Prototype

T. Tischler, S. Amar-Youcef, M. Deveaux, D. Doering, I. Fröhlich, M. Koziel

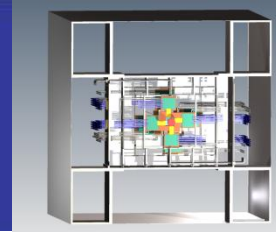
J. Michel, C. Müntz, C. Schrader, S. Seddiki, J. Stroth, C. Trageser

and B. Wiedemann

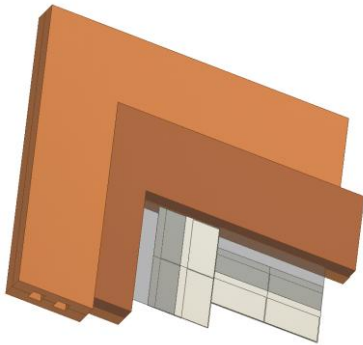




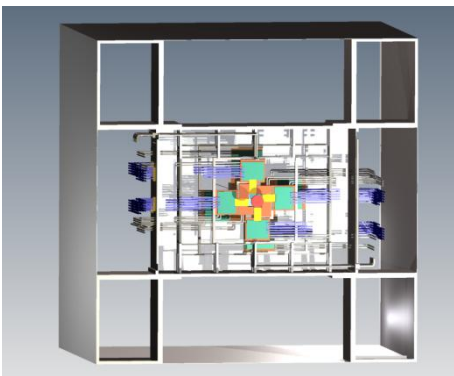
System Integration - MVD Prototype



Demonstrator (MIMOSA-20)



Prototype (MIMOSA-26)



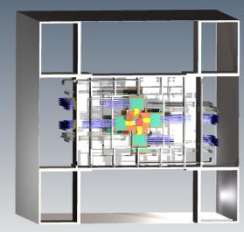
Final MVD (MimoSIS)

How could the MVD Prototype look like?

Which questions are needed to be answered to put the MVD into the CBM Magnet??

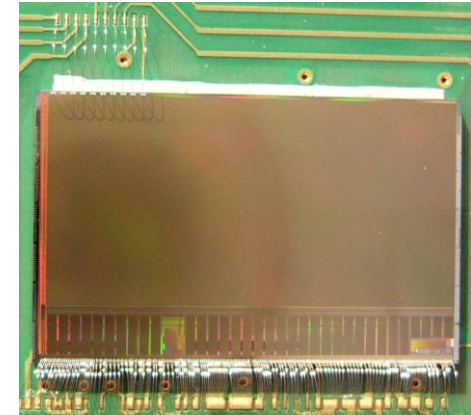
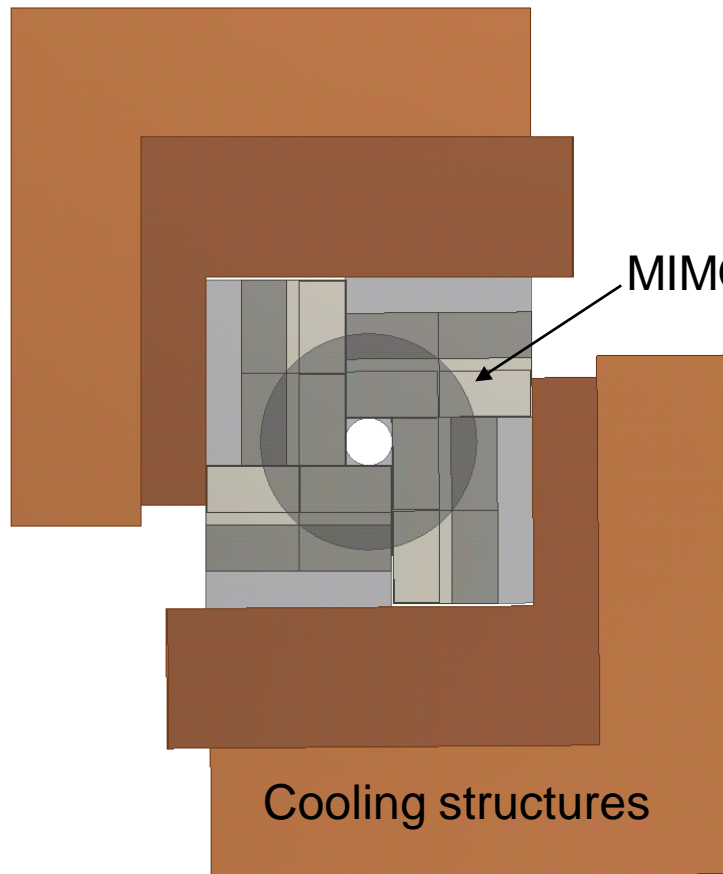


System Integration - MVD Prototype

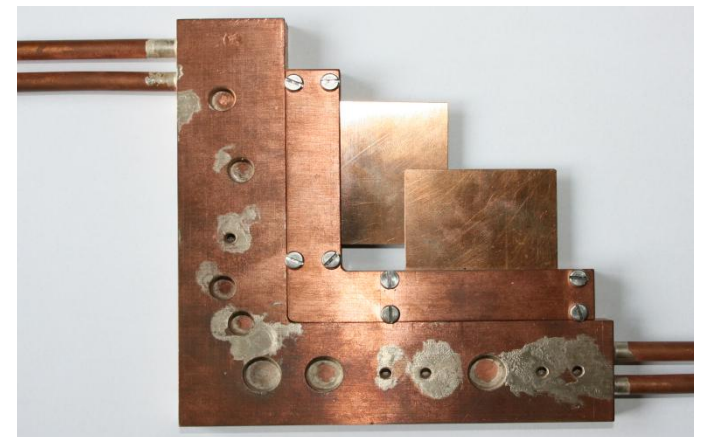


MVD Prototype
based on MIMOSA-26 sensors

The first station of the MVD Prototype will look like:

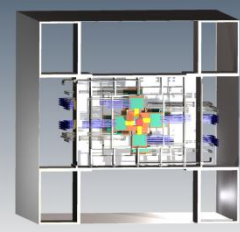


- Sensors are tested and in stock
- FPC and read-out electronics is work in progress
- Cooling structures are also available

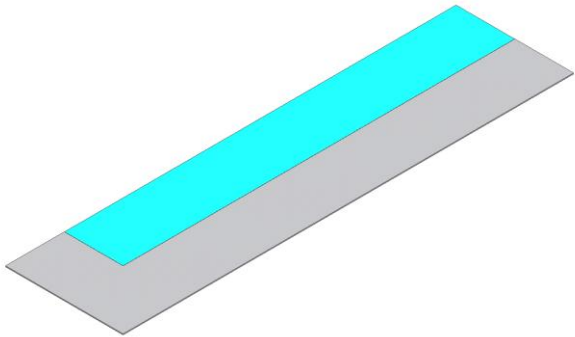




System Integration - MVD Prototype



Possible sensor layout for MimoSIS:



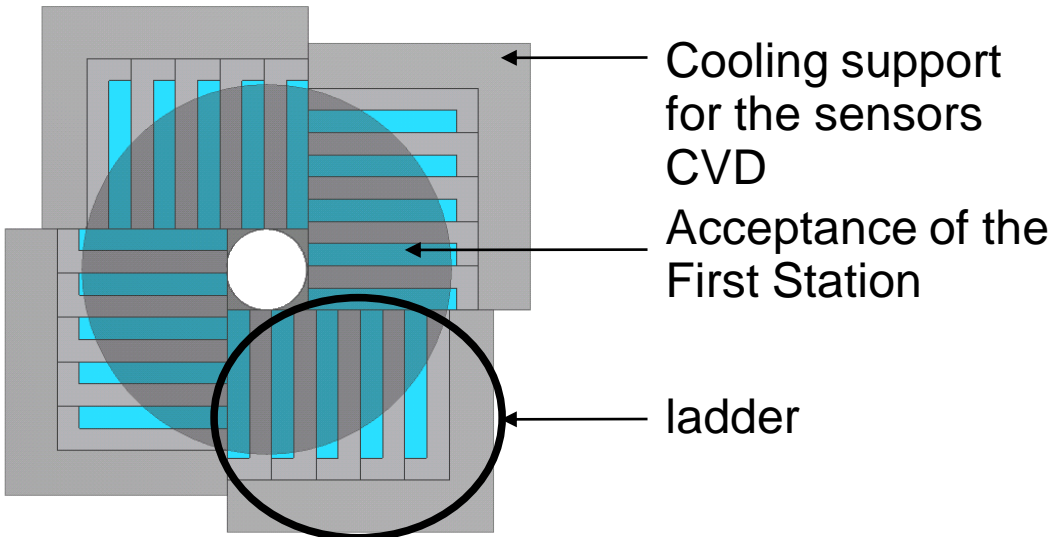
Dimensions:

6 mm in width (3 mm active surface)

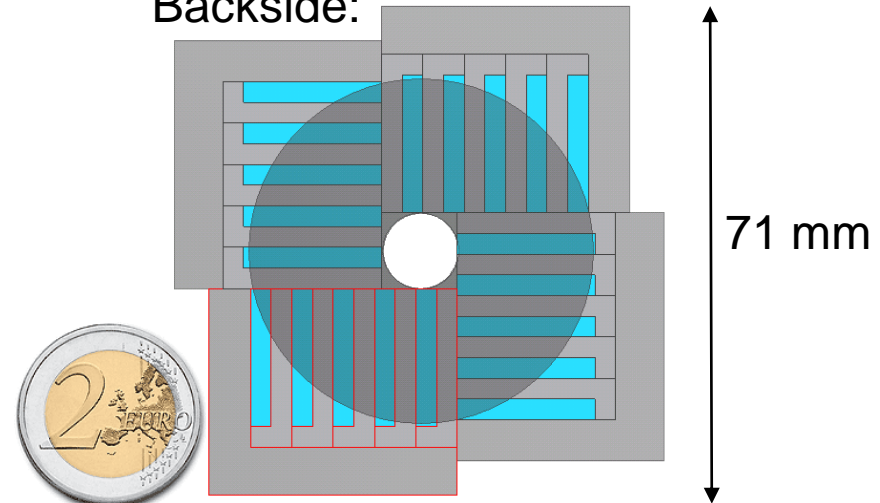
23 mm in length (20 mm active surface (blue))

First MVD station:

overall 40 sensors, 10 per ladder, 5 per side

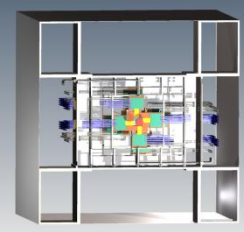


Backside:

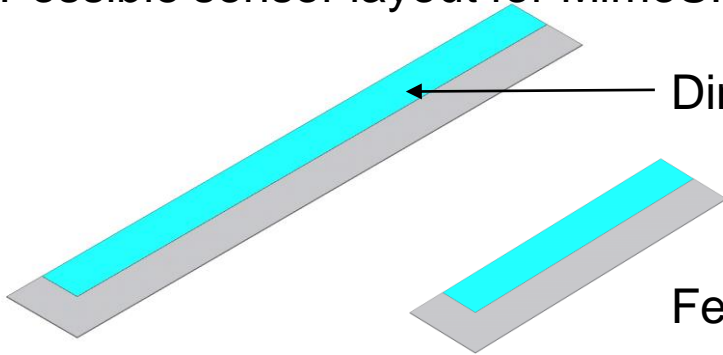




System Integration - MVD Prototype



Possible sensor layout for MimoSIS:



Dimensions:

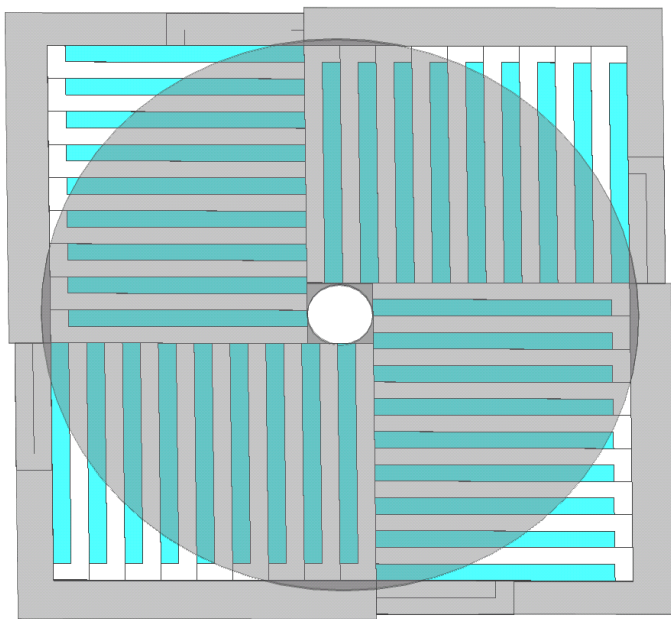
6 mm in width (3 mm active surface)

43 mm in length (40 mm active surface (blue))

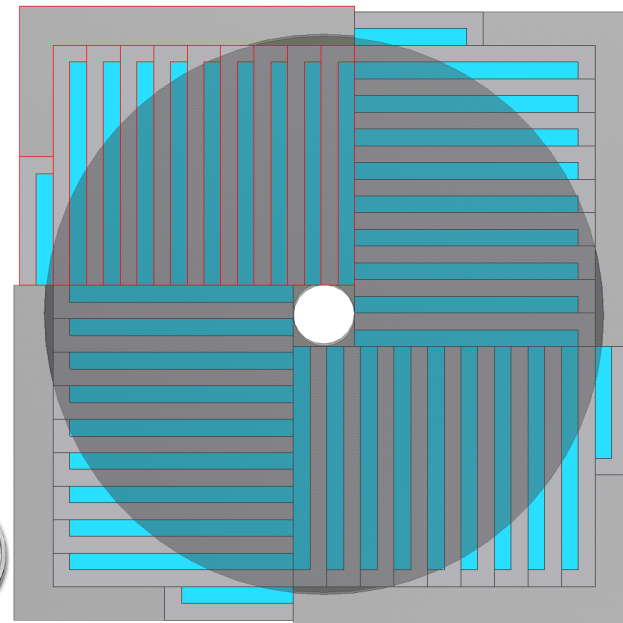
Feasibility under consideration

Second MVD station:

overall 76 sensors, 19 per ladder, 9 (+1) per side



Backside:

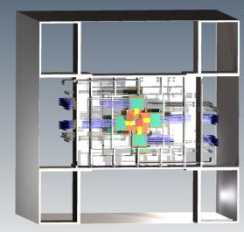


111 mm

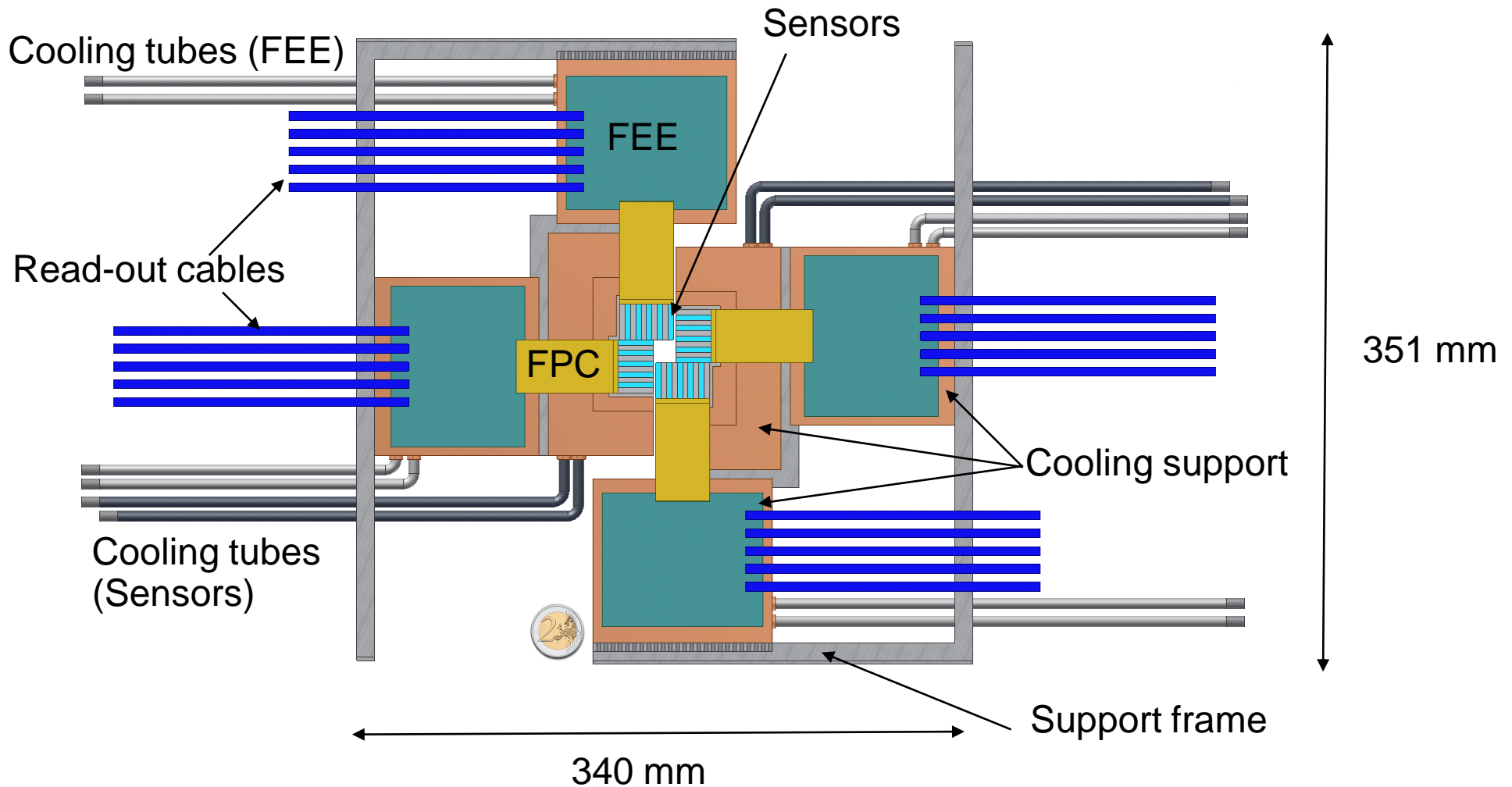




System Integration - MVD Prototype

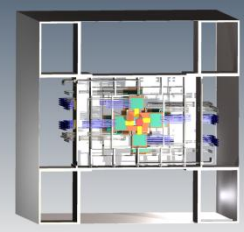


First ansatz for a schematic design of
the **first** MVD station, including cooling and support structures:

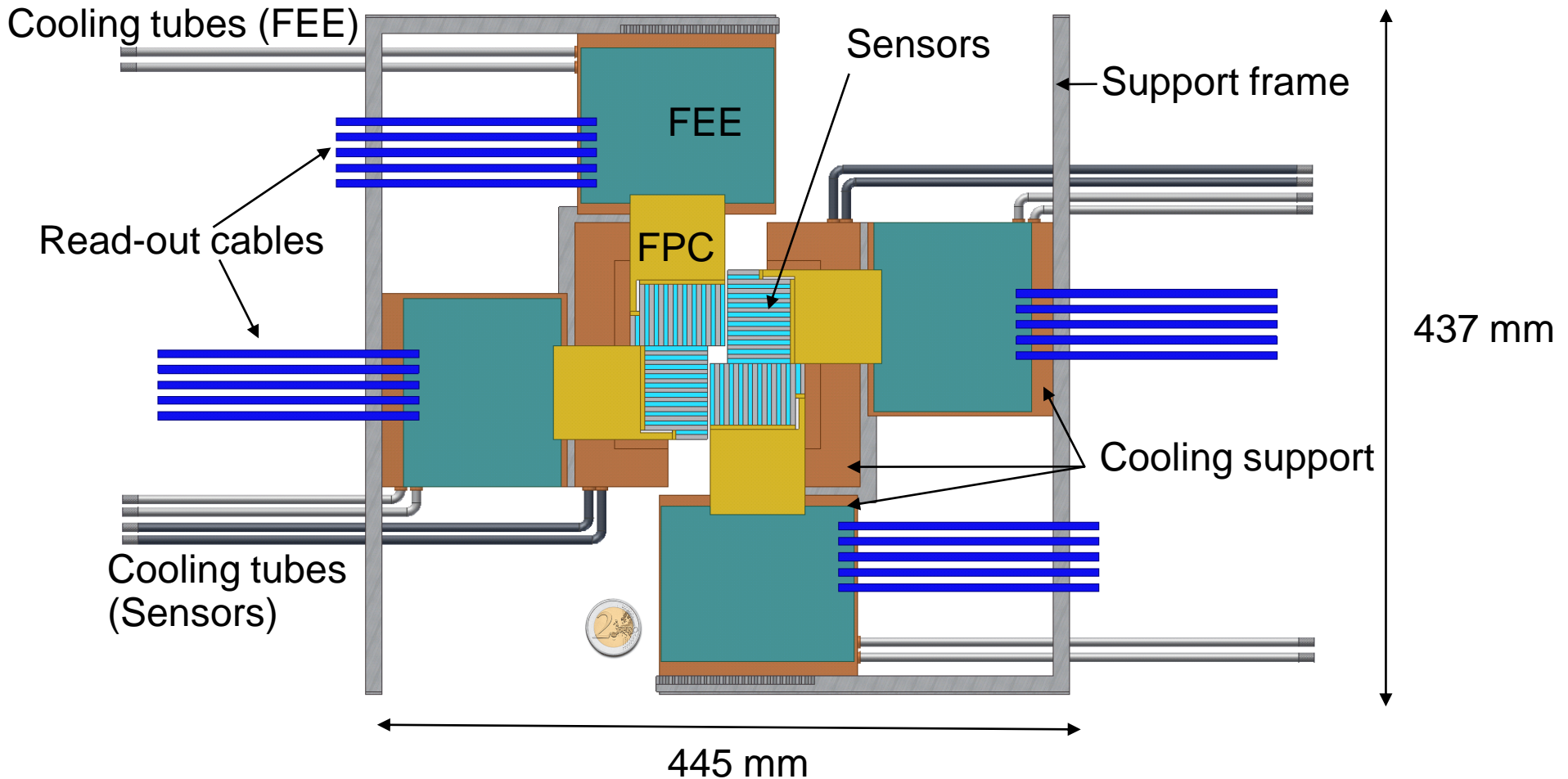




System Integration - MVD Prototype

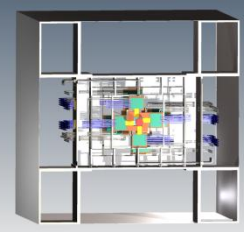


First ansatz for a schematic design of
the **second** MVD station, including cooling and support structures:





System Integration - MVD Prototype

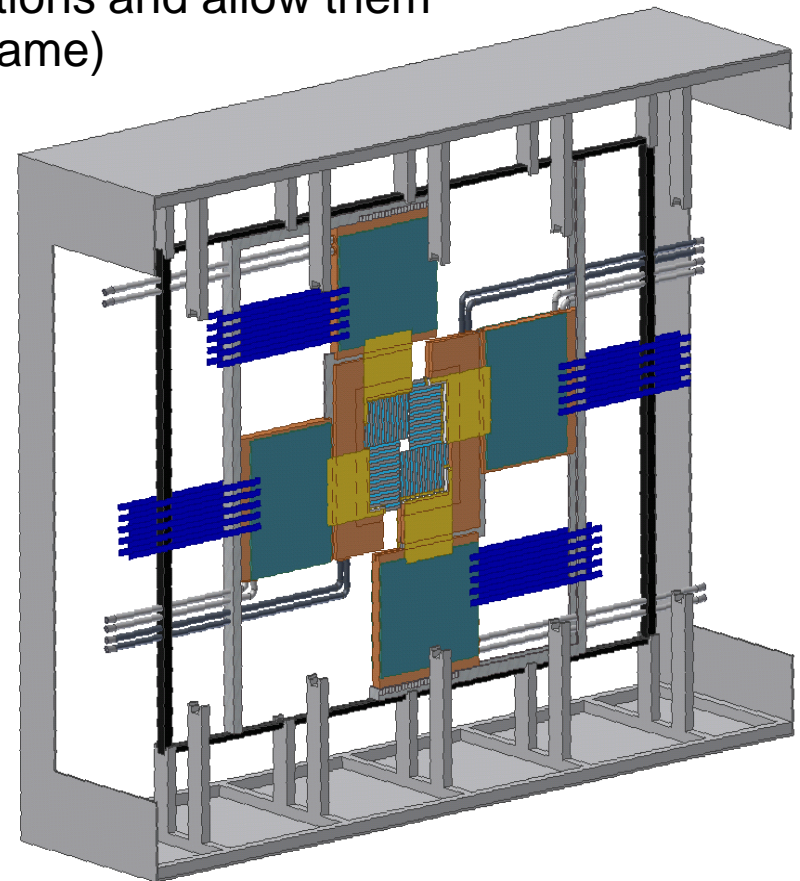
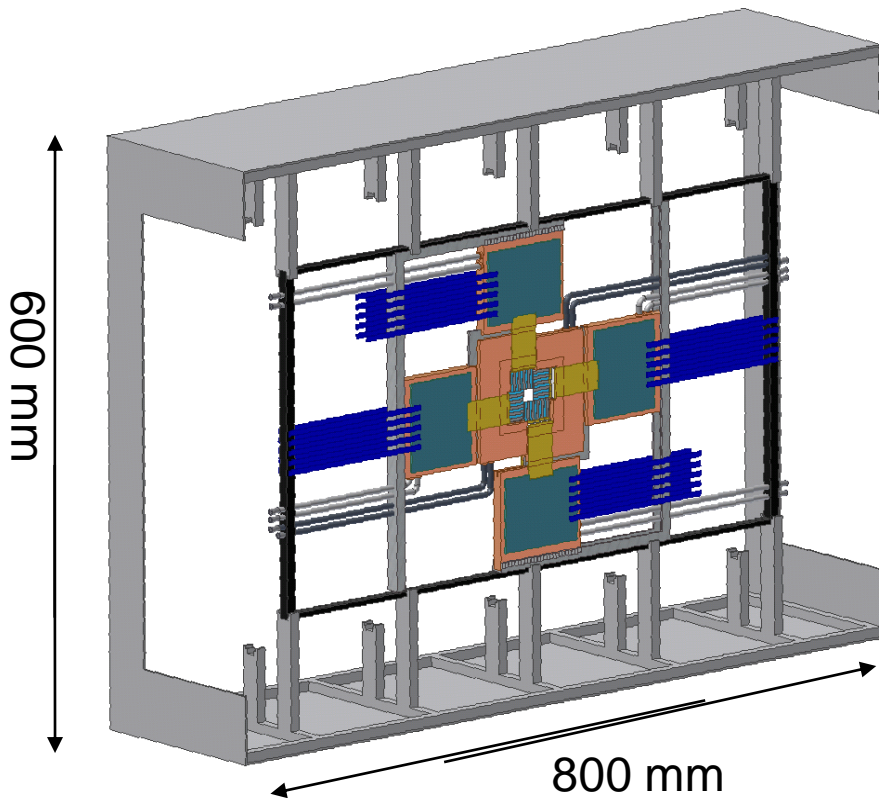


Vacuum vessel including

the **first** (left) and

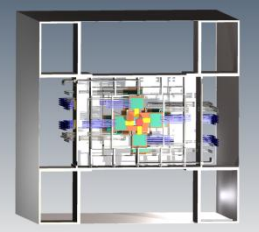
the **second** (right) station,

also visible support structures to hold the stations and allow them to slide in x-direction (black frame)

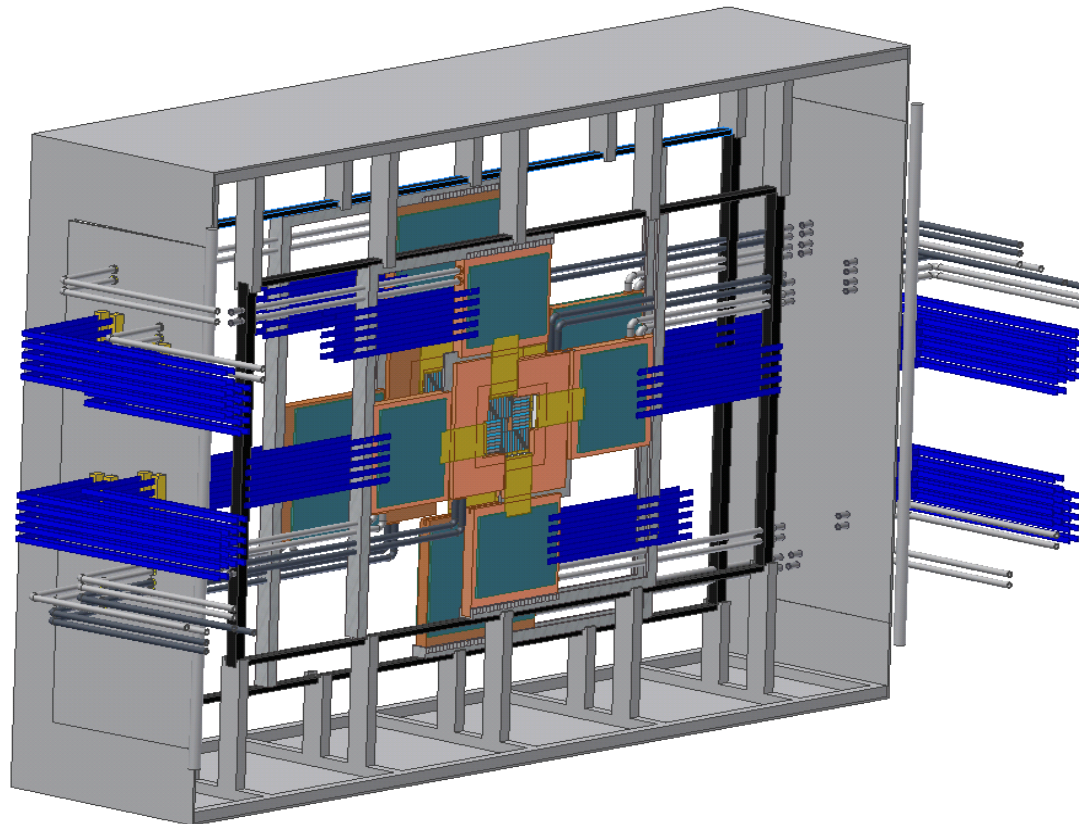




System Integration - MVD Prototype

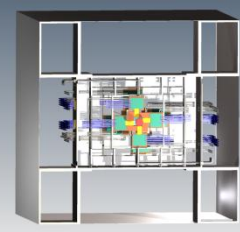


Vacuum vessel including both
the first (front) and the second (back) station,
also visible “doors” to open the vessel and replace the stations,
feed-throughs for the read-out cables and the cooling pipes

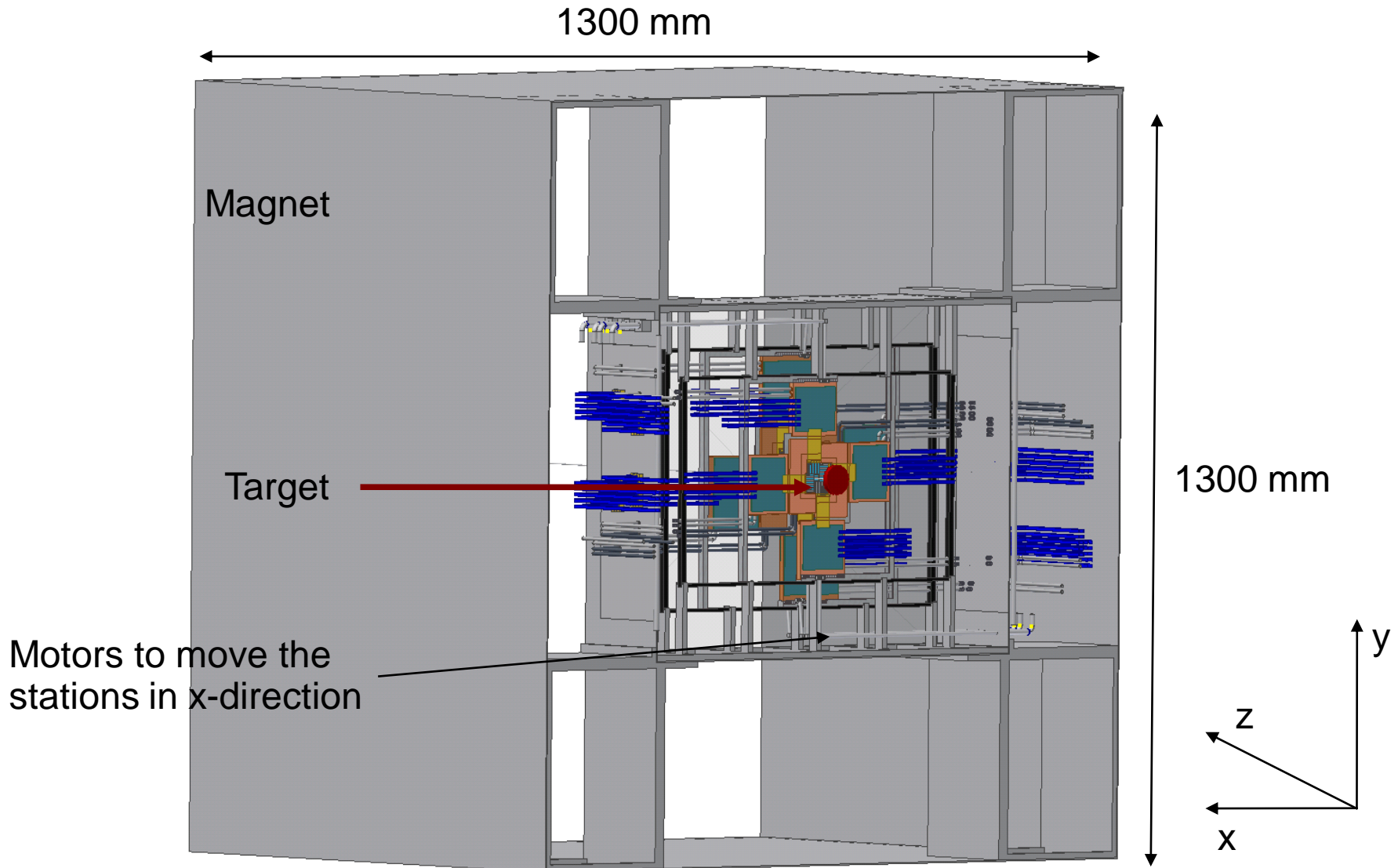




System Integration - MVD Prototype

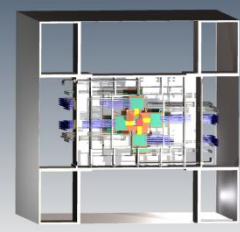


Complete MVD inside the magnet,
including Target, support structures for the vessel and endcaps to close the vessel

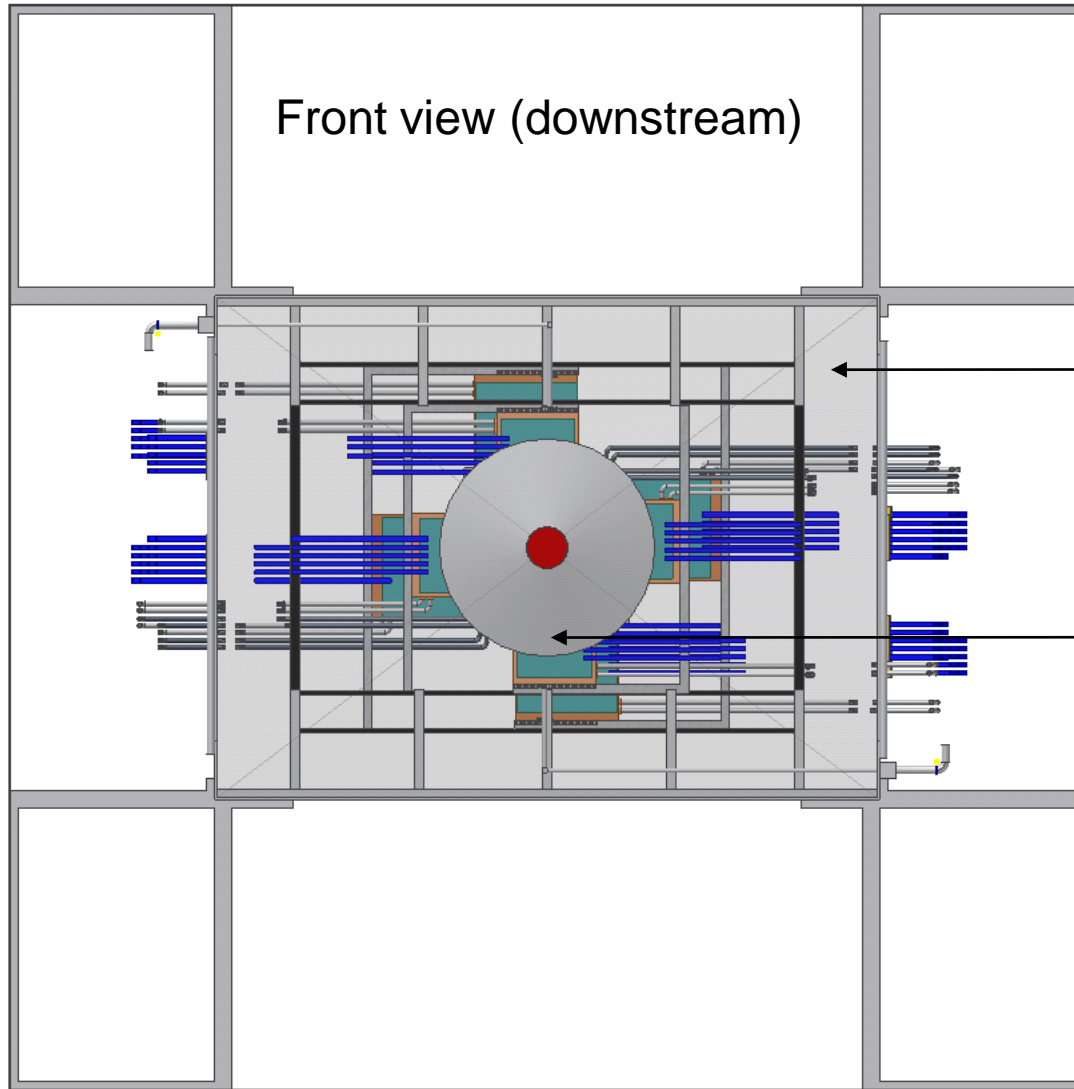




System Integration - MVD Prototype



Front view (downstream)



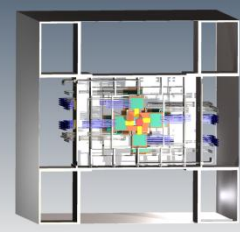
Vessel for the MVD:

Keep-in-Volume
 $604 \times 1030 \times 200 \text{ mm}^3$
including Vessel and cables,
cooling tubes out side of the
vacuum

Vessel, included in simulation



System Integration - MVD Prototype Discussion



To be discussed:

- Service positions
 - Service positions for the MVD stations needed to shield the sensors against unfocused beam (focusing, conditioning)
- Access to the detectors
 - Access to the detector for fast debugging repair, service
 - Access for mounting, service
- Keep-in-Volume
 - Actual design asks for a Keep-in-Volume of 604 x 1030 x 200 mm³
- Definition of the vacuum vessel
 - Positions and numbers of feed-throughs for the low voltage, cooling, read-out cables

