

B0 tasks overview: vacuum

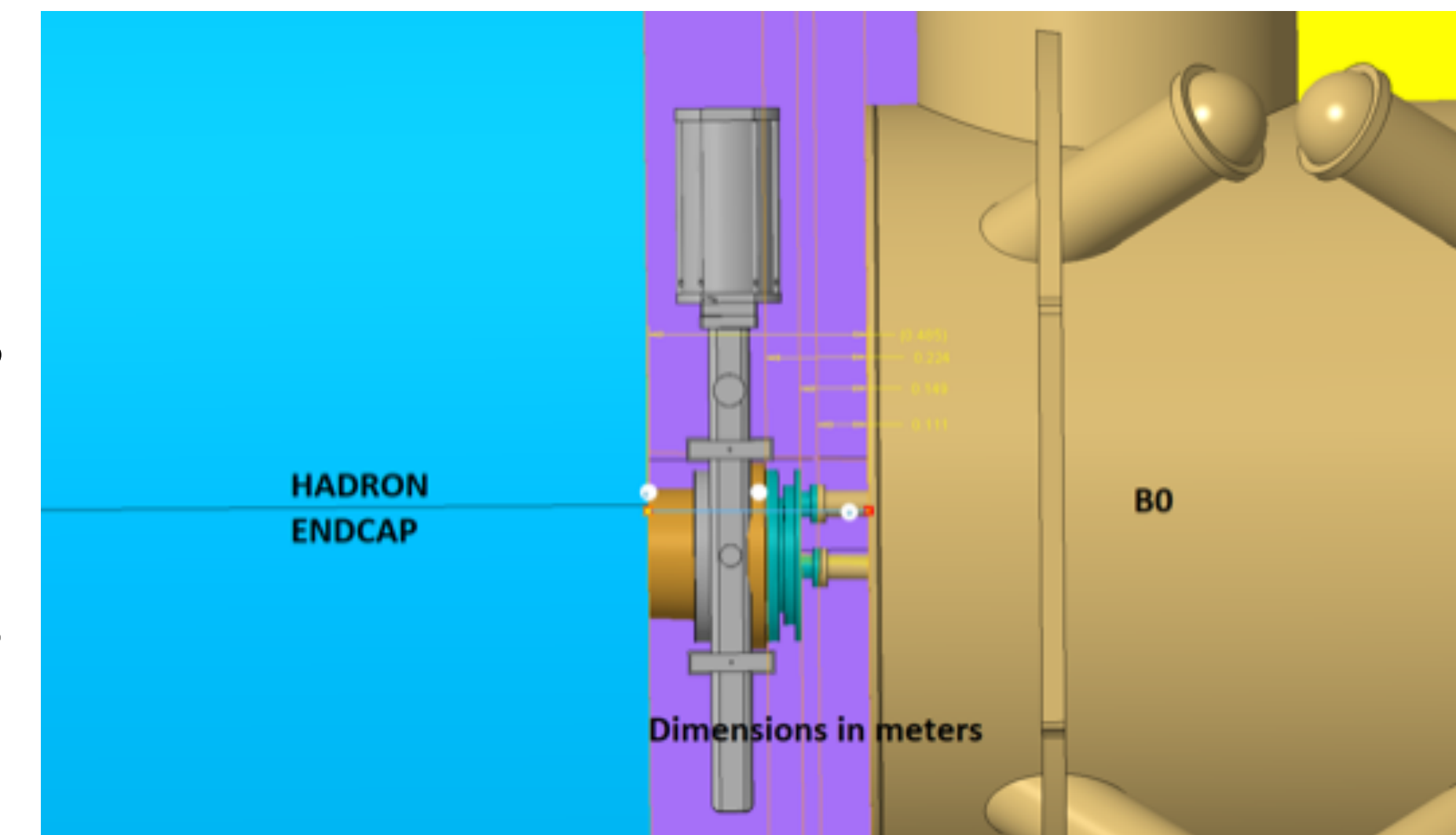
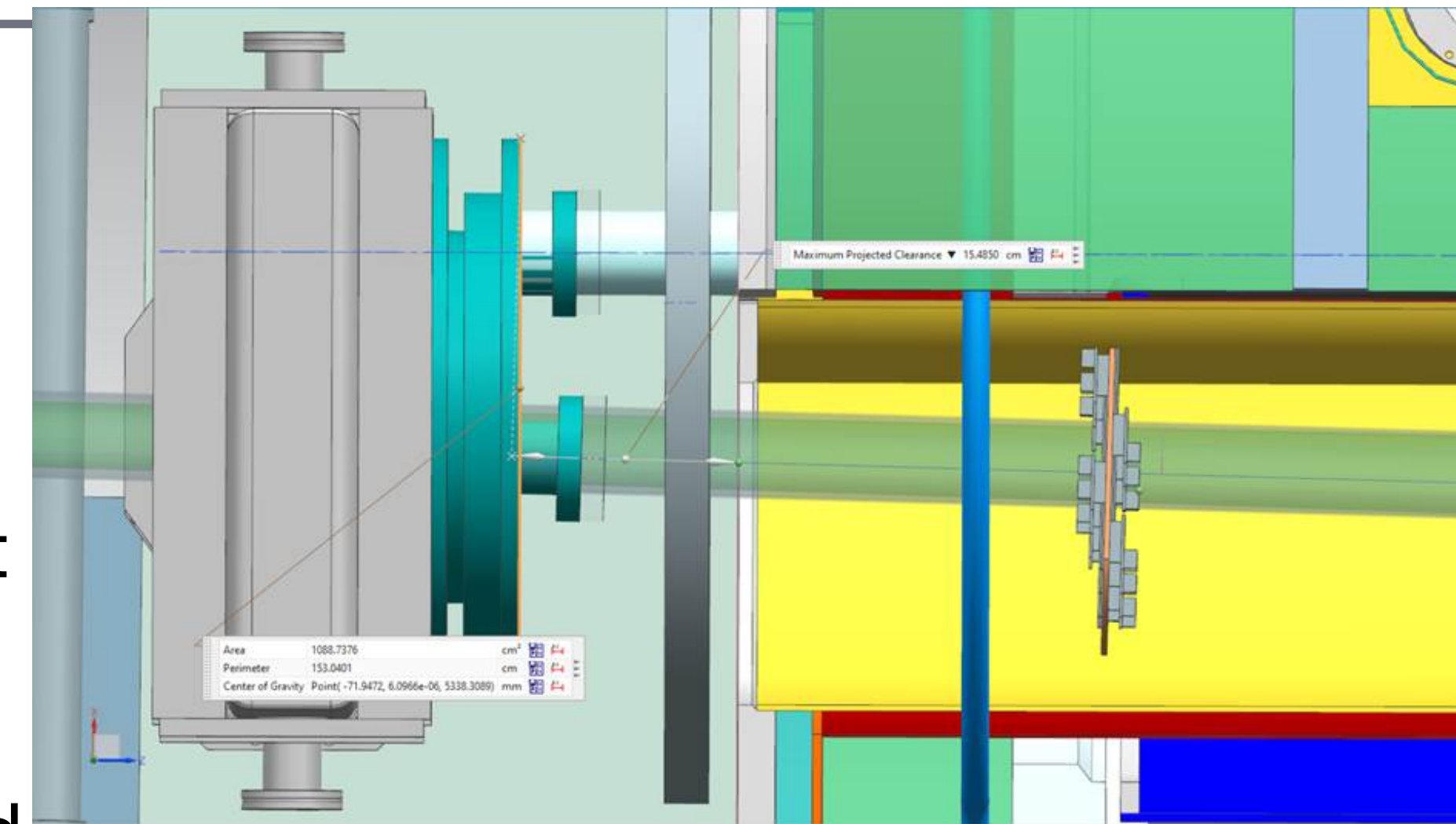
- Vacuum

- ➔ Free space in front is currently $< 5\text{cm}$

- ❖ Gate-valve: bellows servicing the B0 will be on the IP side of the beampipe, between the valve and endcap. Vertical placement is preferred.
- ❖ Z-thickness of AC-LGAD layers (needs to be $< 5\text{cm}$). Readout boards/VTRX+

- ➔ Stay-clear area near the beam-pipe:

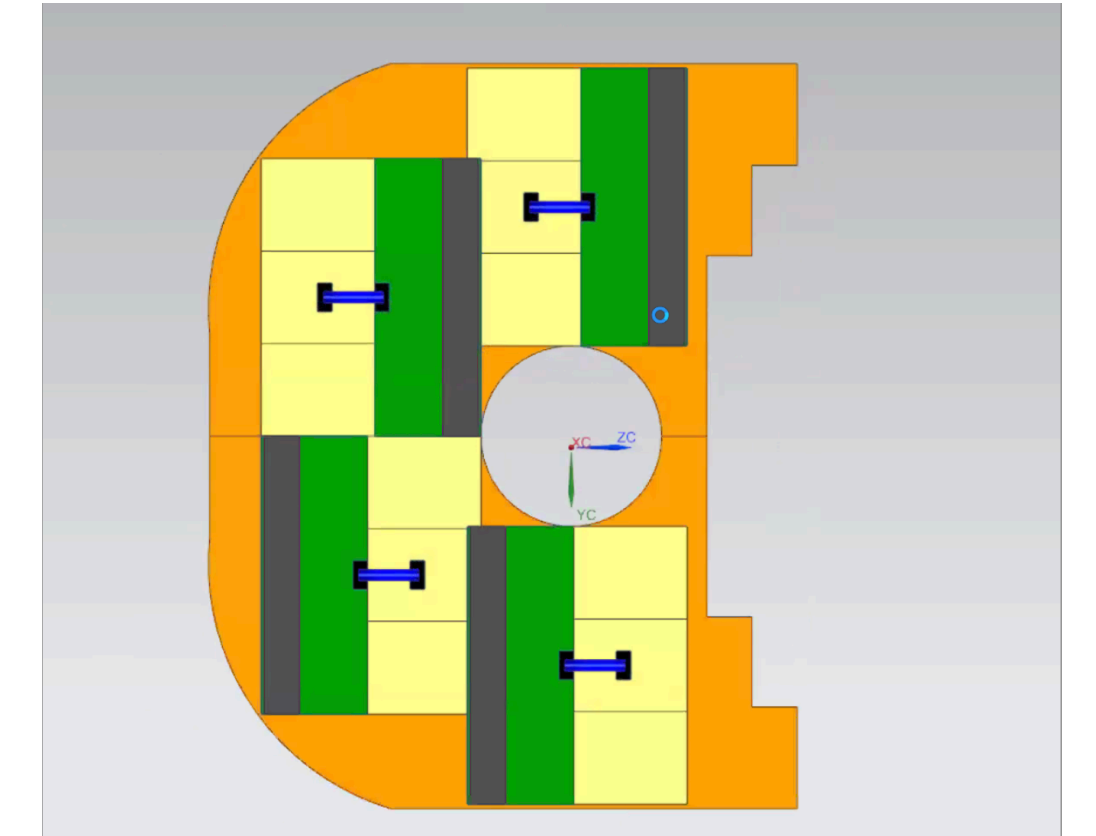
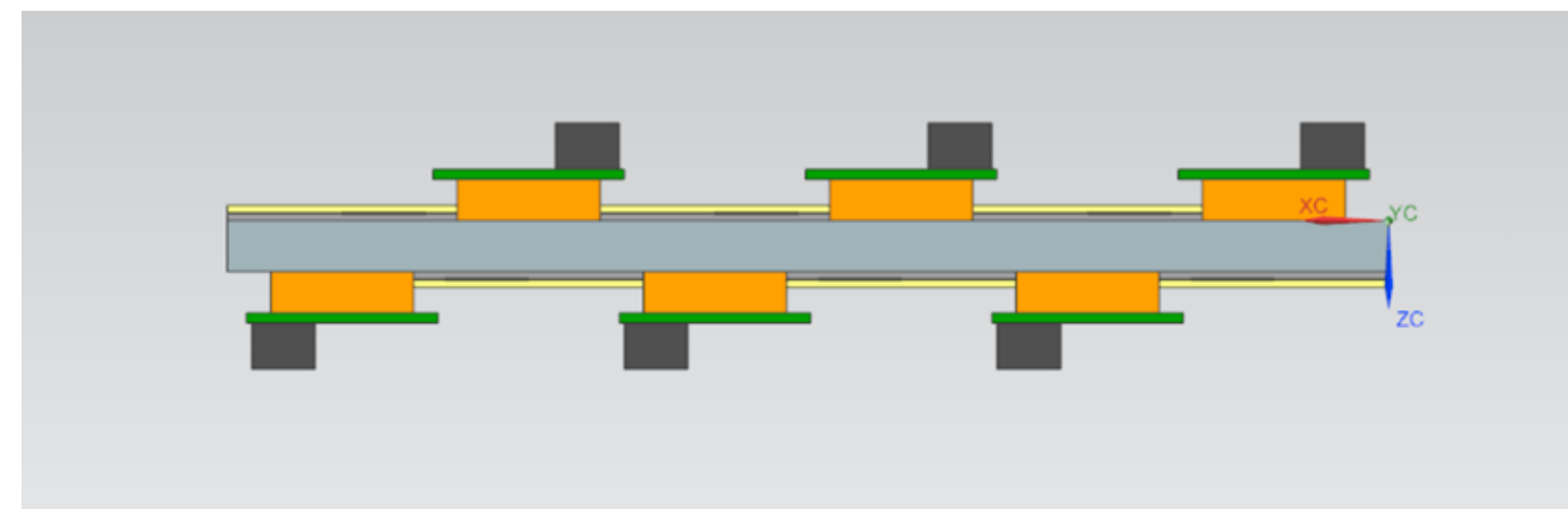
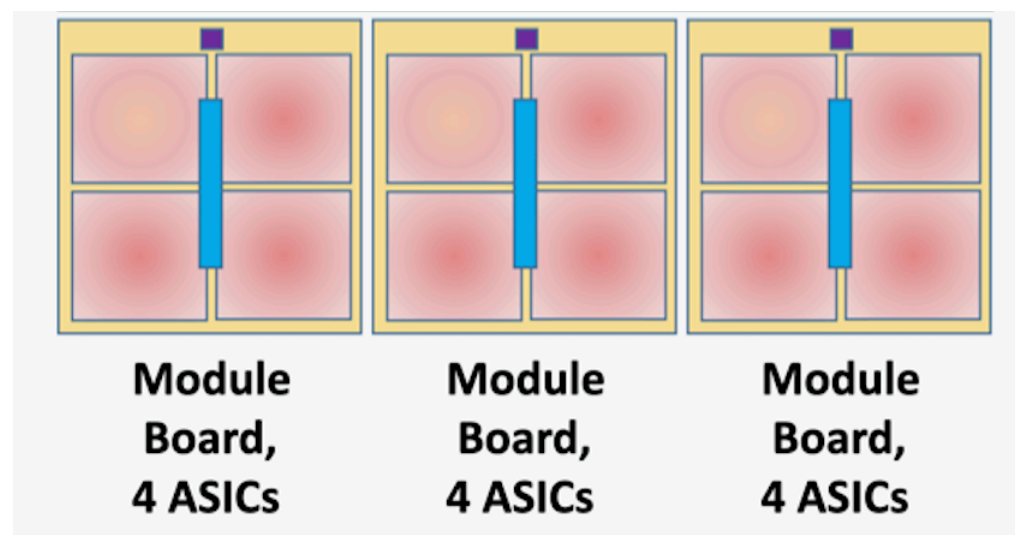
- ❖ 2mm spacing needed between calorimeter/tracking layers and the beampipe. Depending on the bake-out procedure this distance could be ca 5mm (temperature tolerance of AC-LGADs needs to be checked)
- ❖ Fernando/Christophe: The operating temperature for the ASICs is limited to 70 degree C (not guaranteed above this). Unpowered, the ASICs survive to about 120 degree C. However, the limitation is then determined by other components, such as PCB, solder, etc.
- ❖ Bake-out temperature?



B0 tasks overview: tracker

- **AC-LGAD tracker**

- ❖ Z-thickness of AC-LGAD layers (needs to be $< 5\text{cm}$).
- ❖ Location for Readout boards
 - ➔ FTOF layout - min RD3 ($3 \times 4 = 12$ EICROCS per board)
 - ➔ Decouple Modules (AC-LGAD+ EICROC and Readout Boards) \Rightarrow cable length $< 2\text{m}$ (Fernando/Christophe: The HGCROC and ALTIROC ASICs -similar to the EICROC - were tested with 2 m long cables on the outputs and they worked well at 1.28 Gbps.)
 - ➔ PCB board for HV/LV, etc distribution ?
- ❖ Cooling
- ❖ Geant4 simulation with actual sensor layout
- ❖ Installation



B0 tasks overview: EMCAL

- **EMCAL and integration with B0-magnet:**
 - ➔ Mechanical support from the back-side of B0 (heavy weight)
 - ➔ Assembly/installation sequence:
 - ❖ B0-EMCAL assembly: glue or a frame for individual crystals?
 - ❖ B0-EMCAL how to attach SiPM boards
 - ❖ The mechanical structure and calorimeter modules without electronics will be installed in the assembly hall (need to know B0-magnet availability, lab space for assembly):
 1. Installation of crystals inside B0. B0 magnet with crystals will be transported to the hall (crane?)
 2. Beam commissioning
 3. Installation of SiPMs/readout on calorimeters
 4. Installation of AC-LGAD tracking layers
 - ➔ Balcony: space for readout/DAQ, shielding?
 - ➔ Mockup

