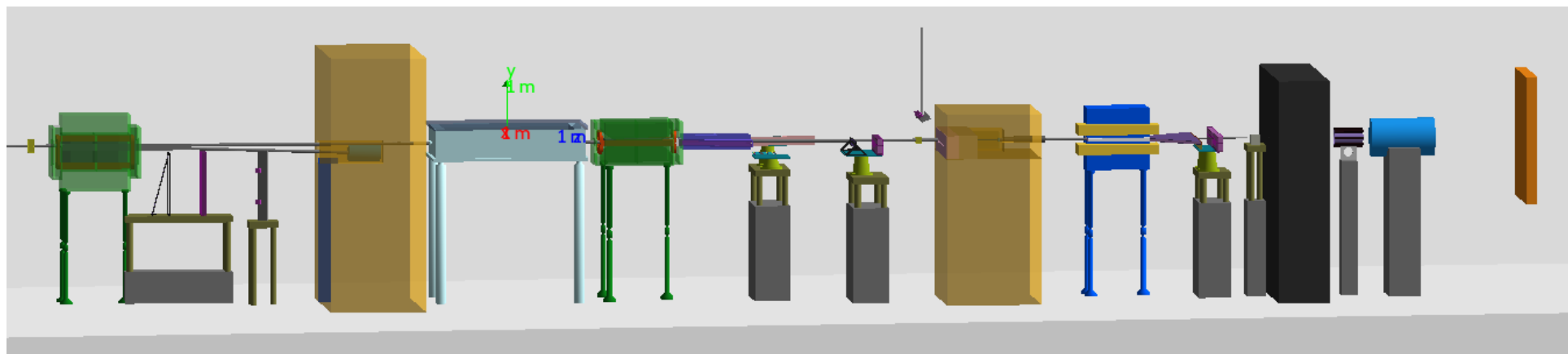


Update on LUXE GEANT4 Simulation

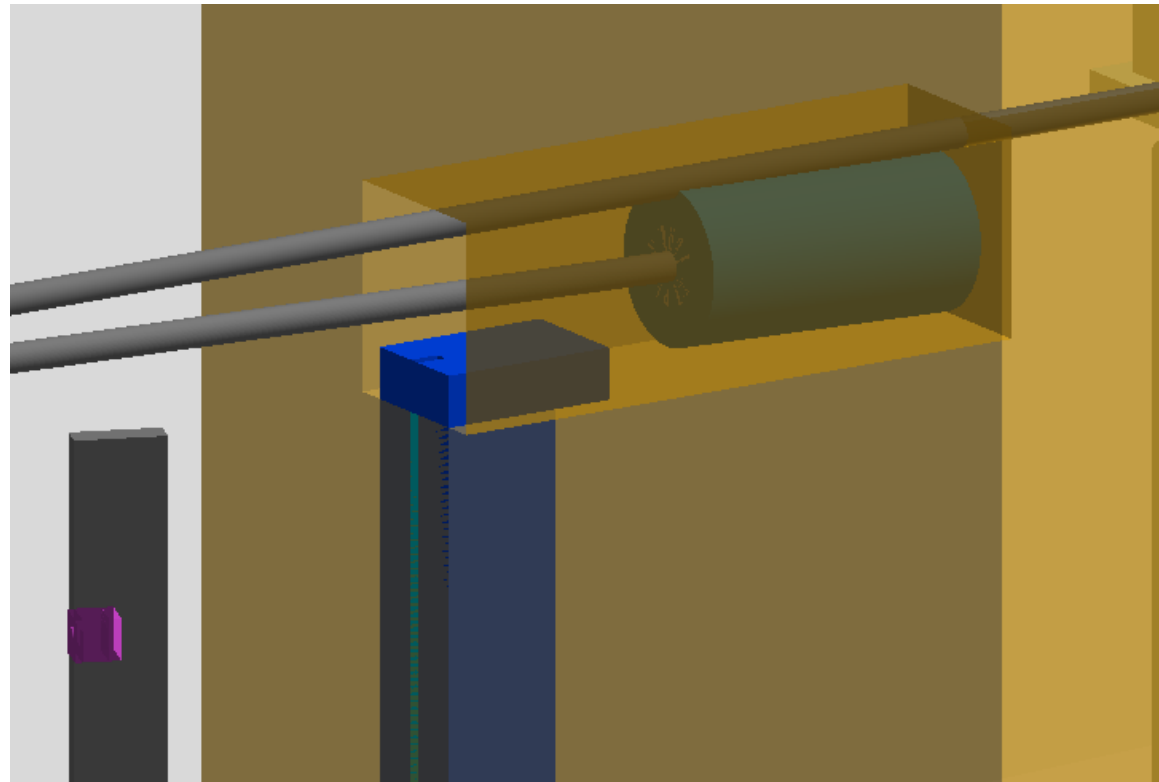
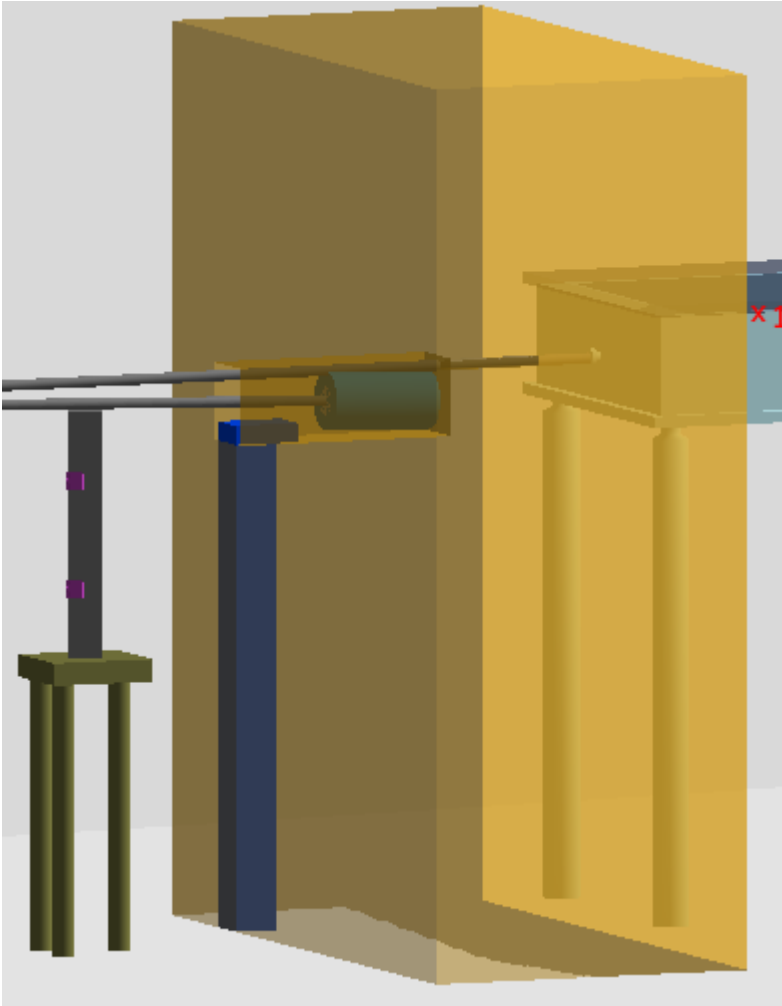
Oleksandr Borysov

LUXE S&A Meeting
August 10, 2021

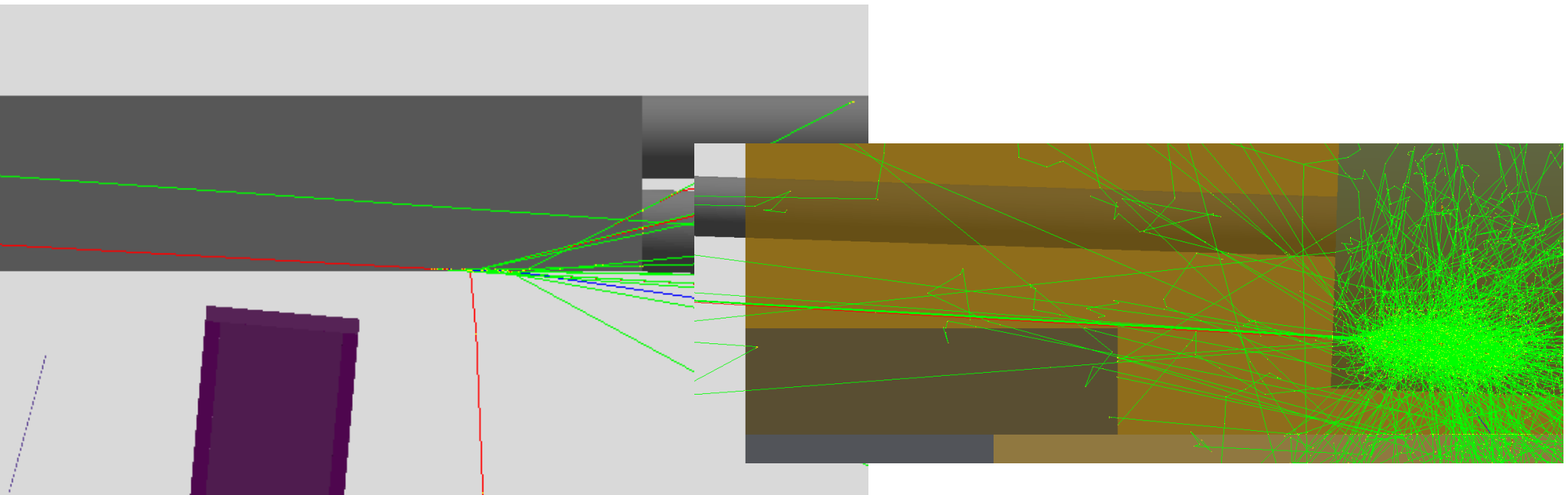
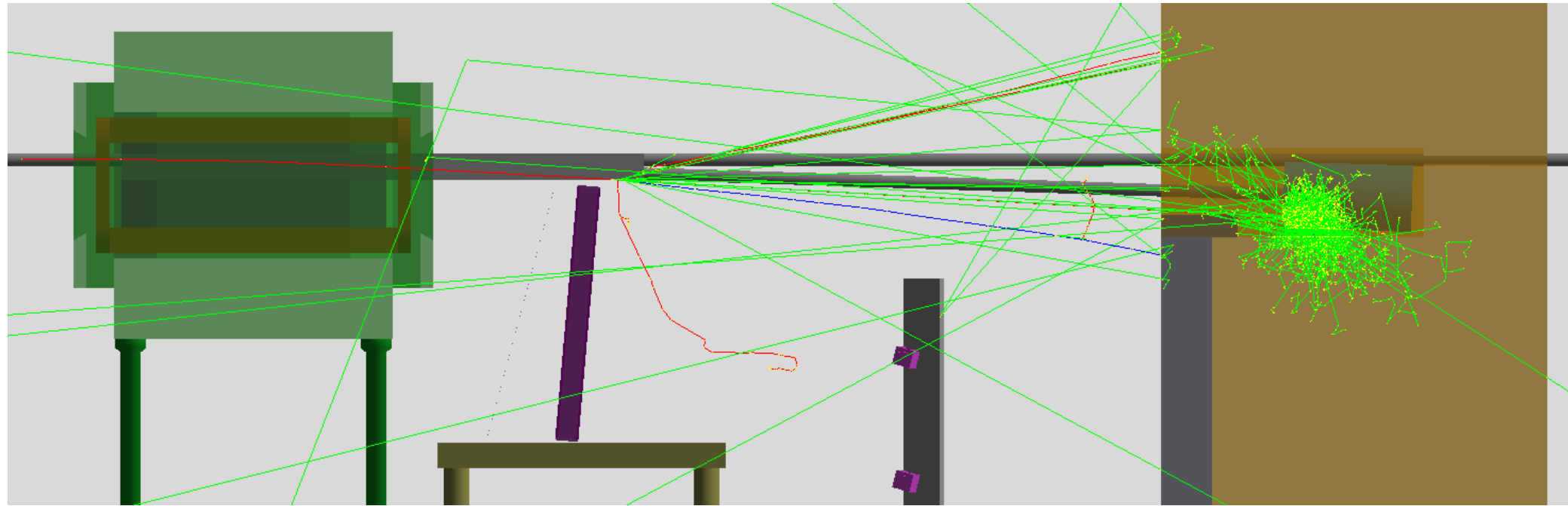


Shielding and beam dump before IP

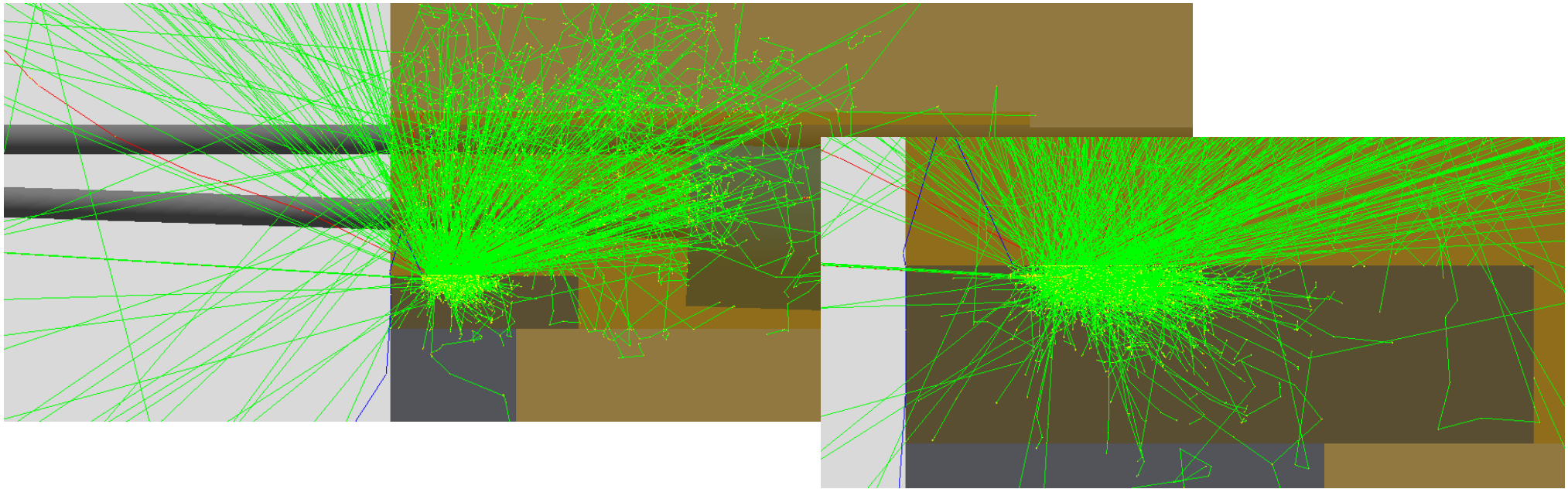
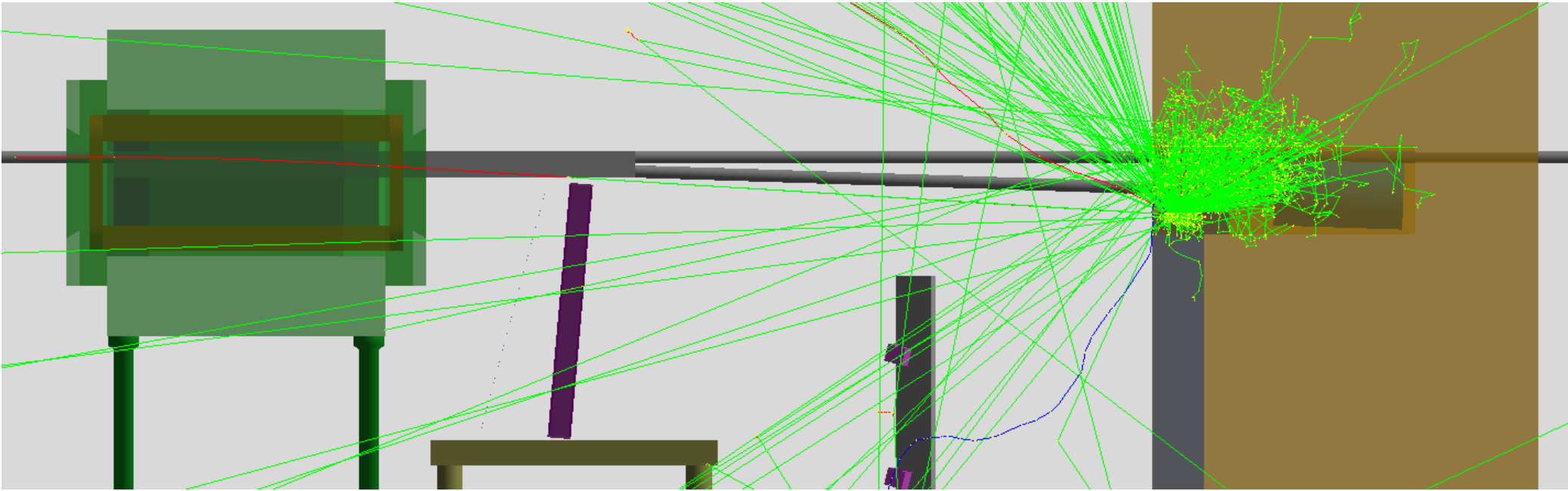
- Concrete 1.5 m;
- Lead bar 20 x 20 cm² with 2x5 cm² groove;
- Additional lead block to cover the gap between shielding and dump.



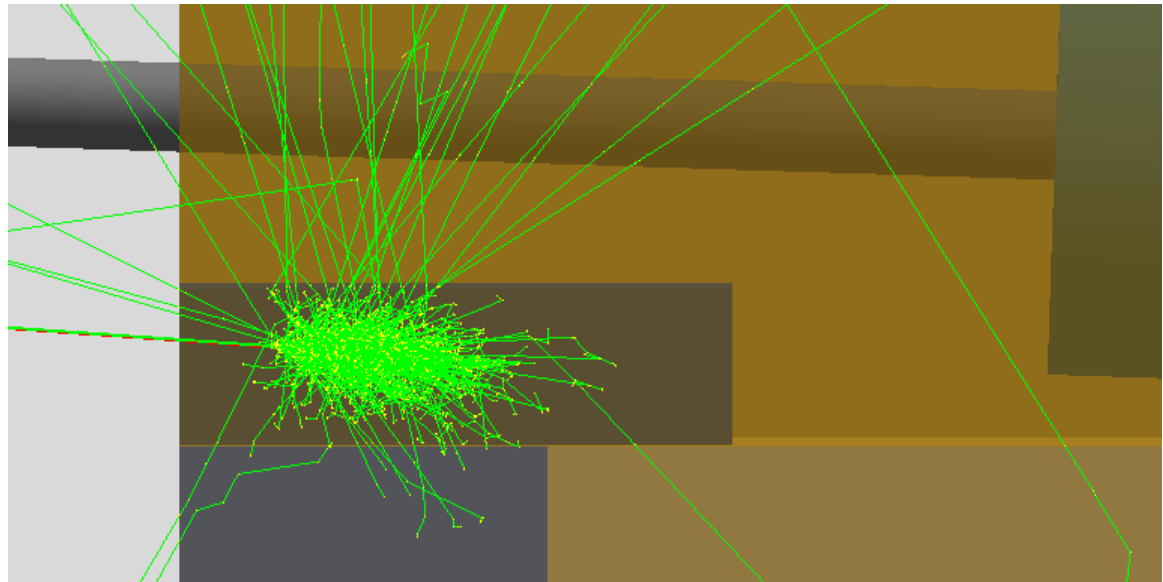
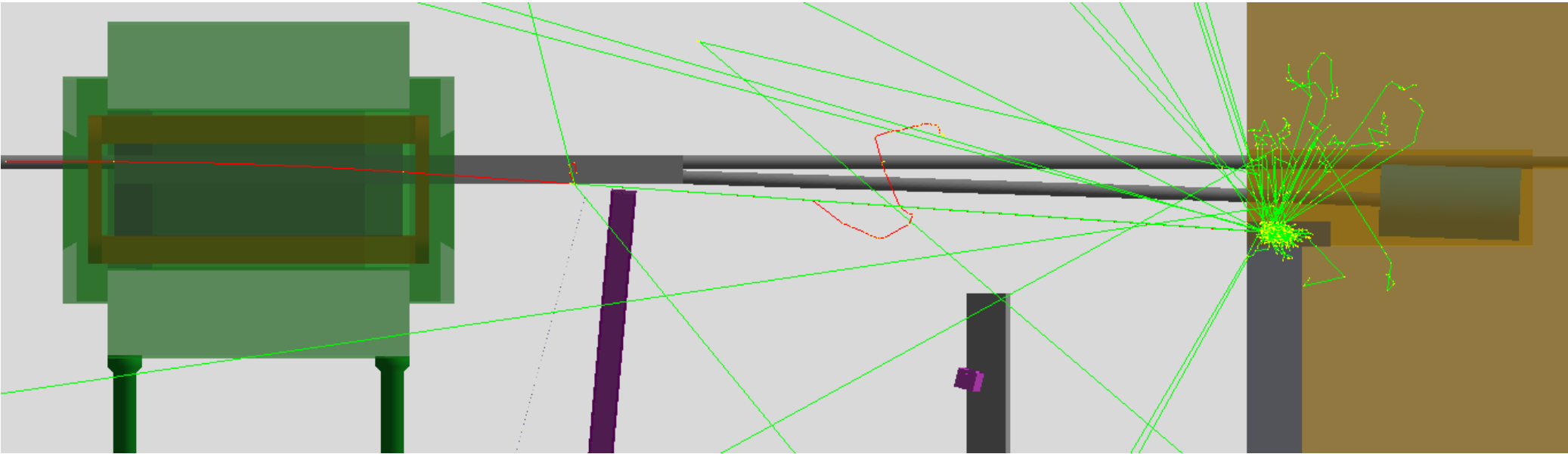
Electron 10 GeV



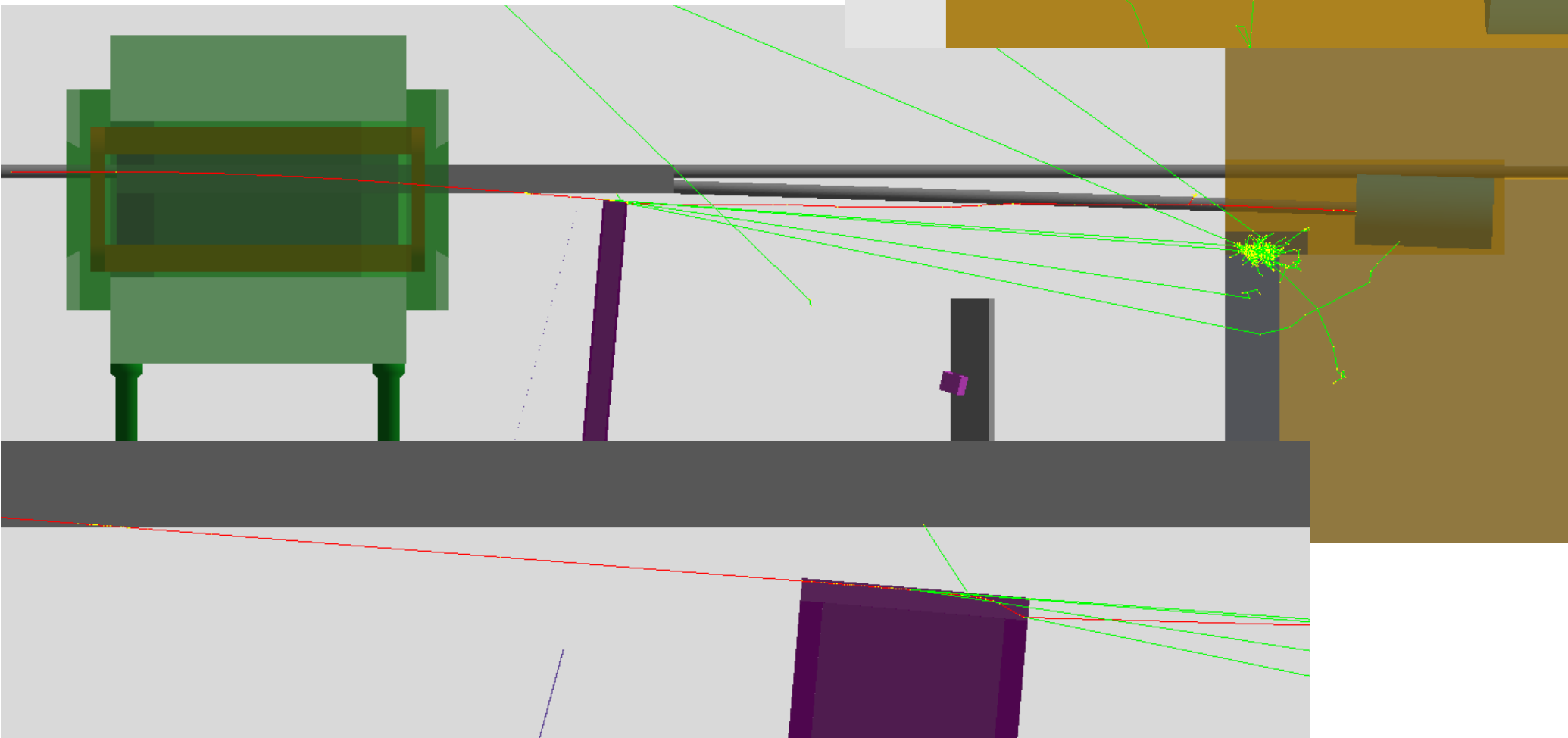
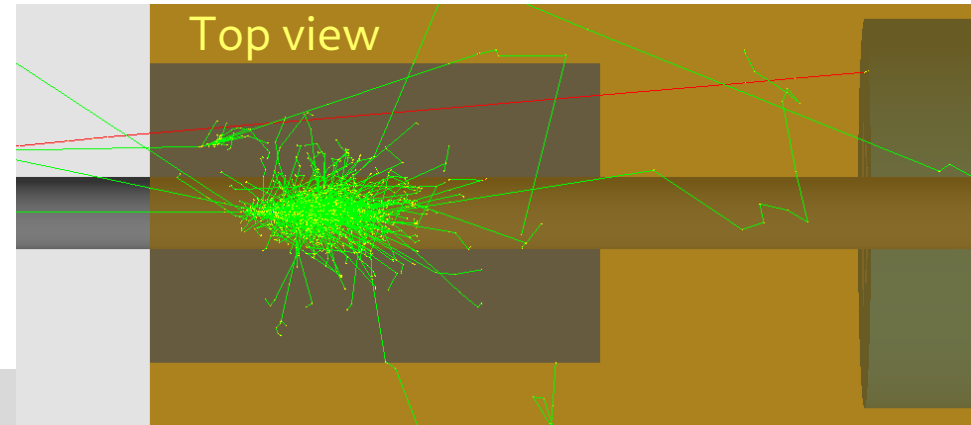
Electron 9 GeV



Electron 8 GeV



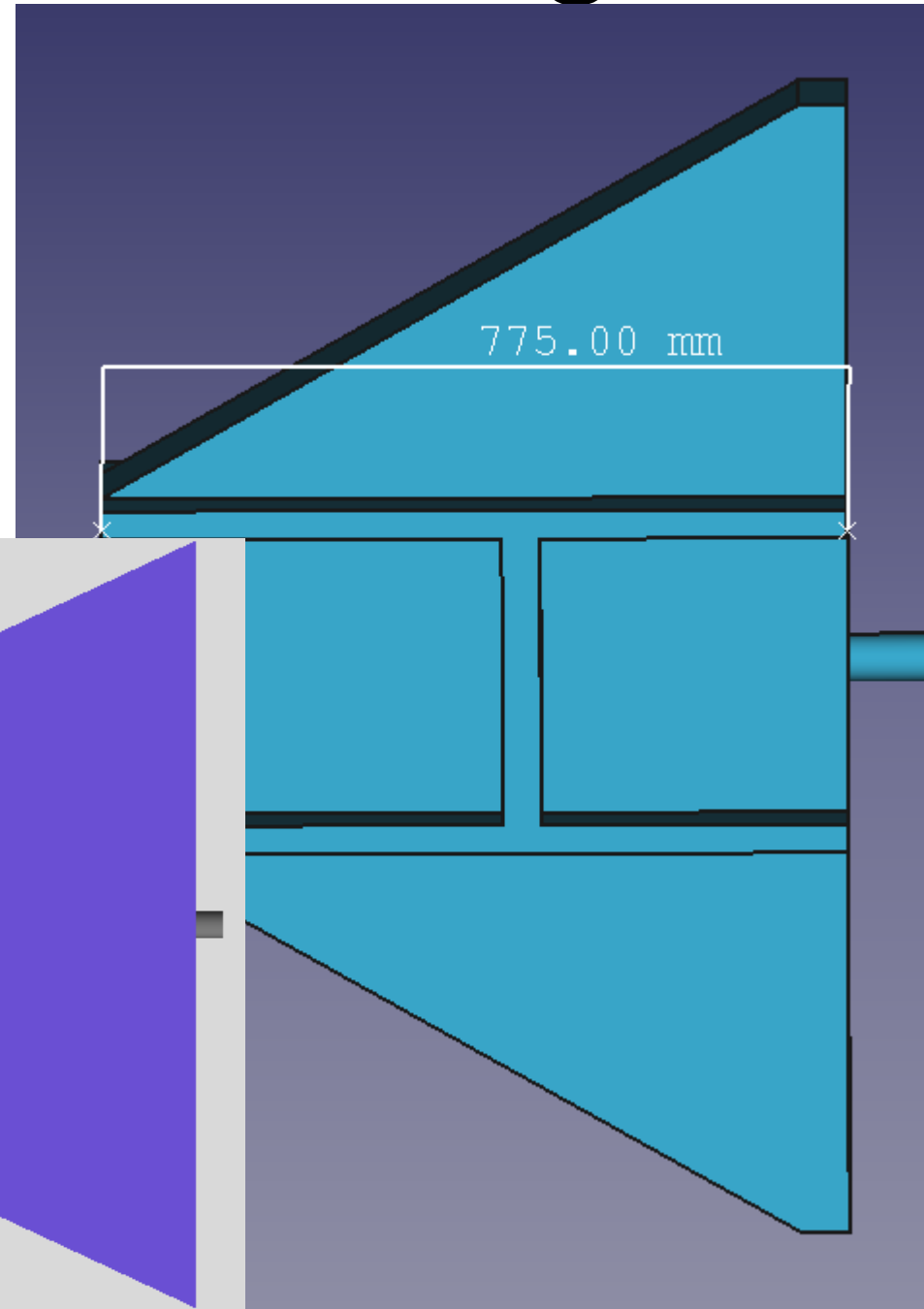
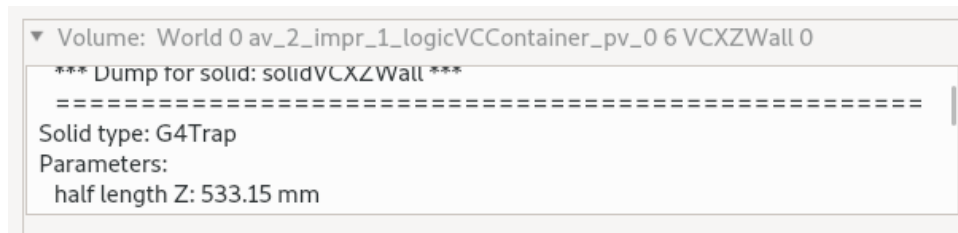
Electron 7 GeV



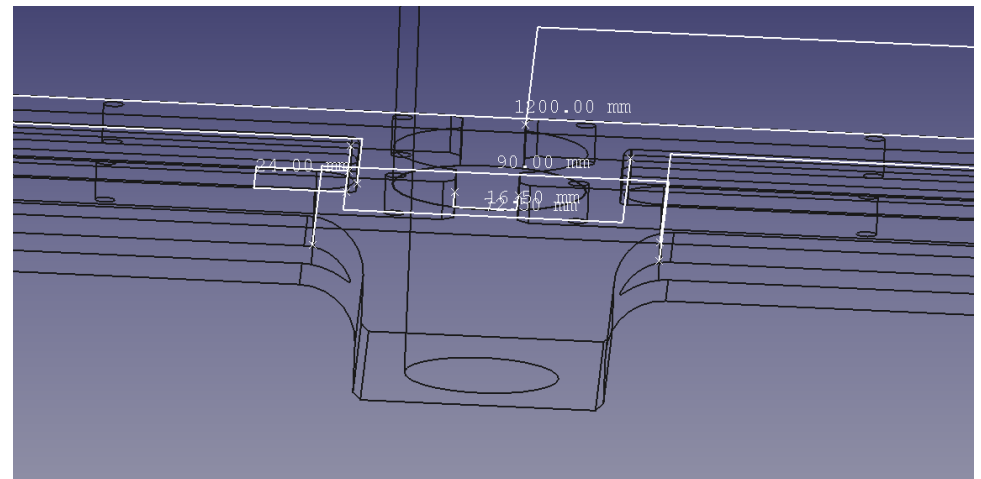
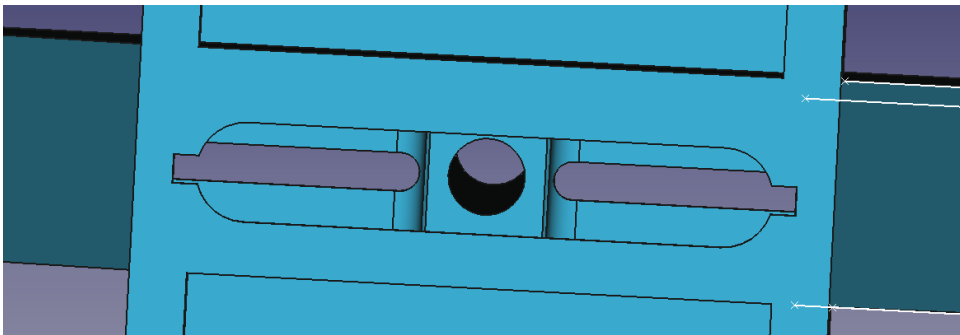
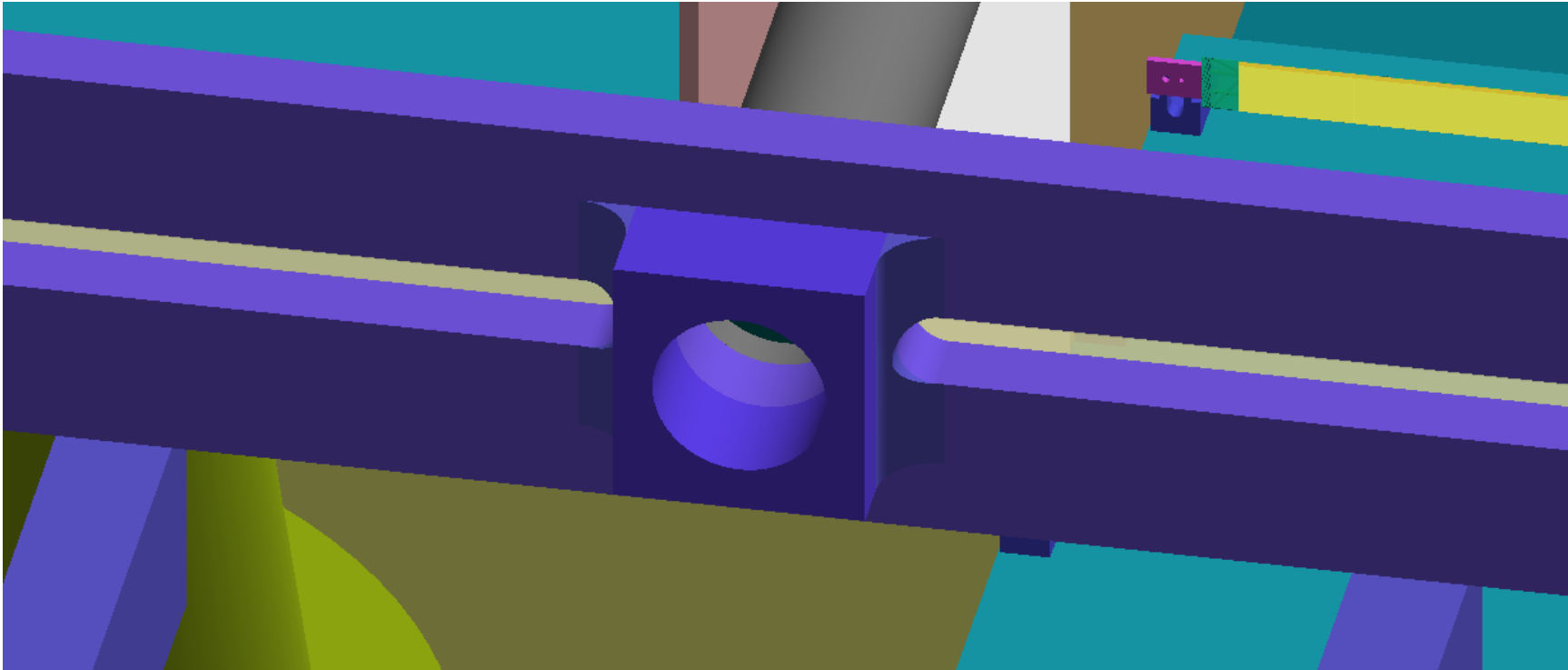
Vacuum chamber length

VC is longer in simulation.

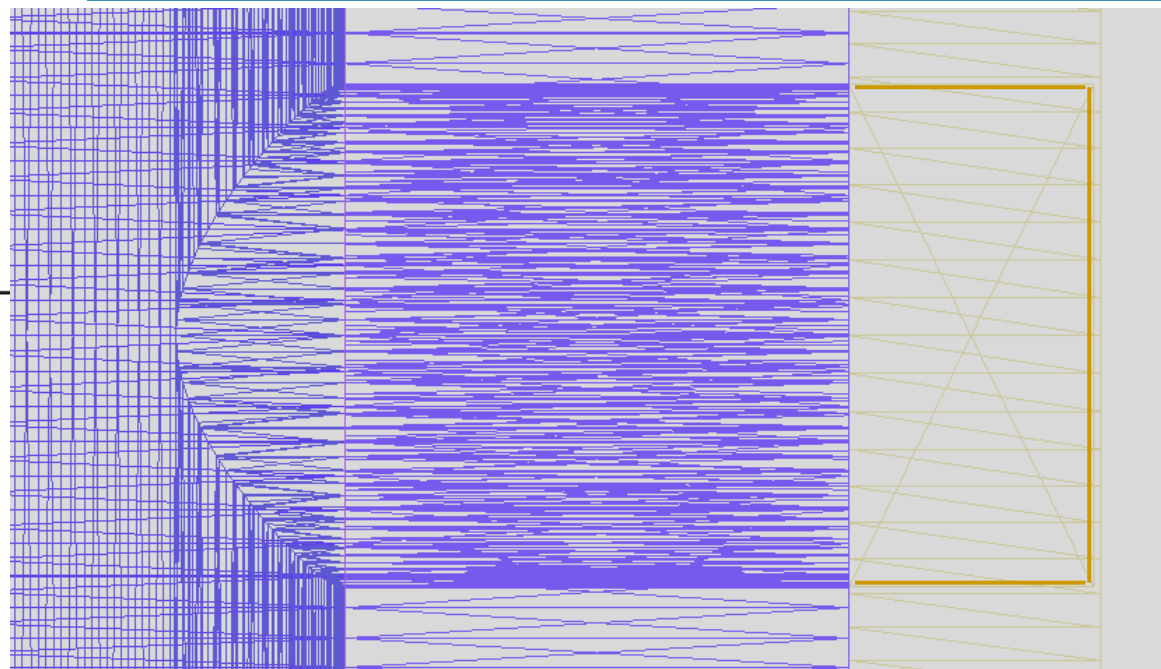
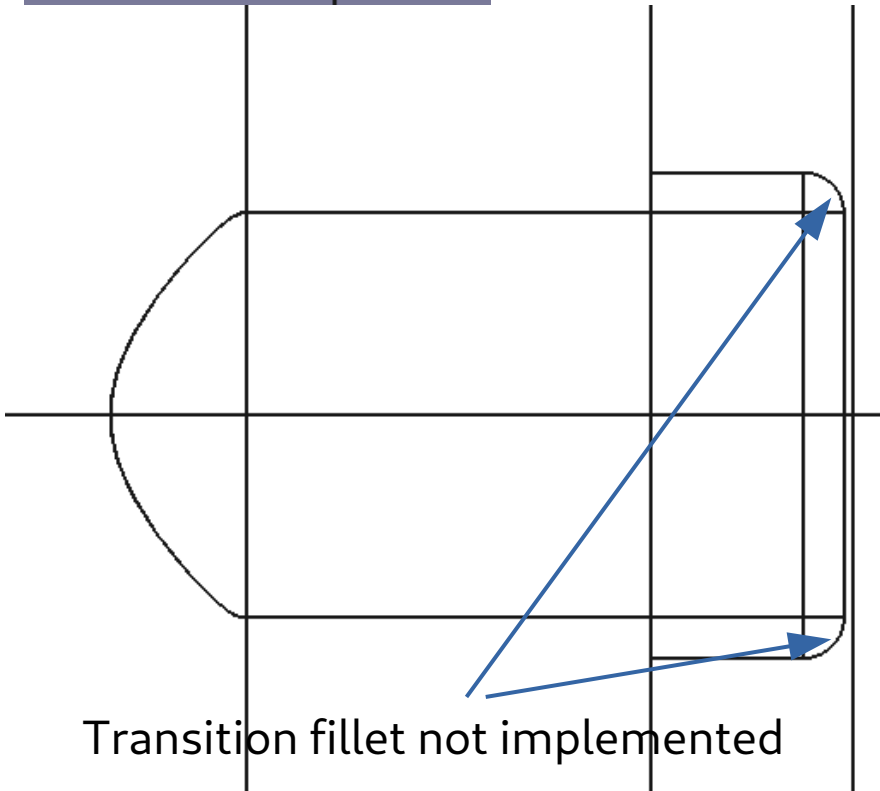
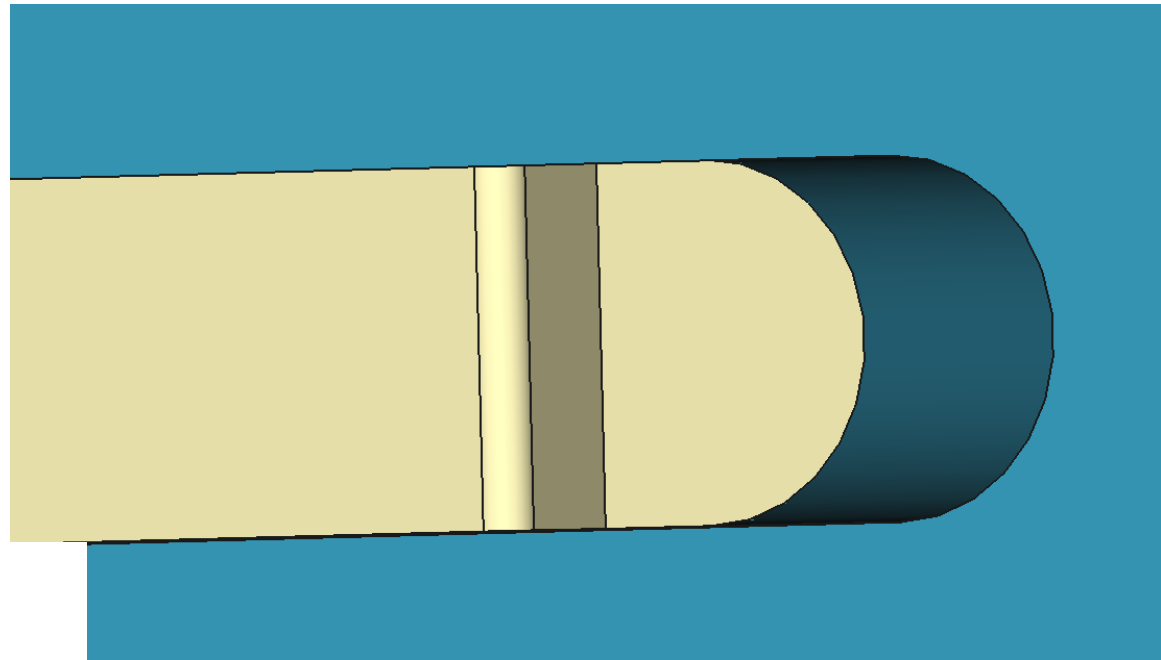
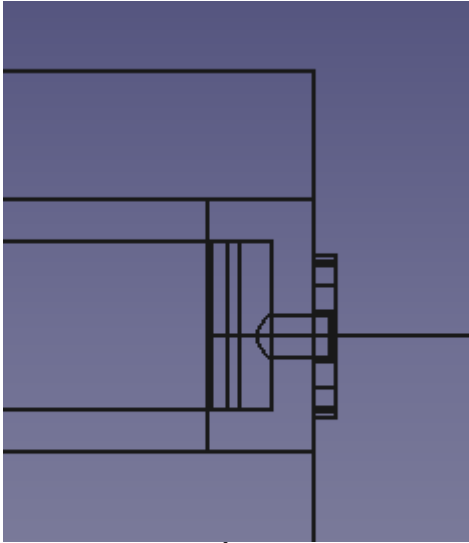
- Distance to the window edge: 30 mm;
- For e⁻, 16.5 GeV, 1T, 1 m magnet and 0.75 m drift, dX = 24 mm.



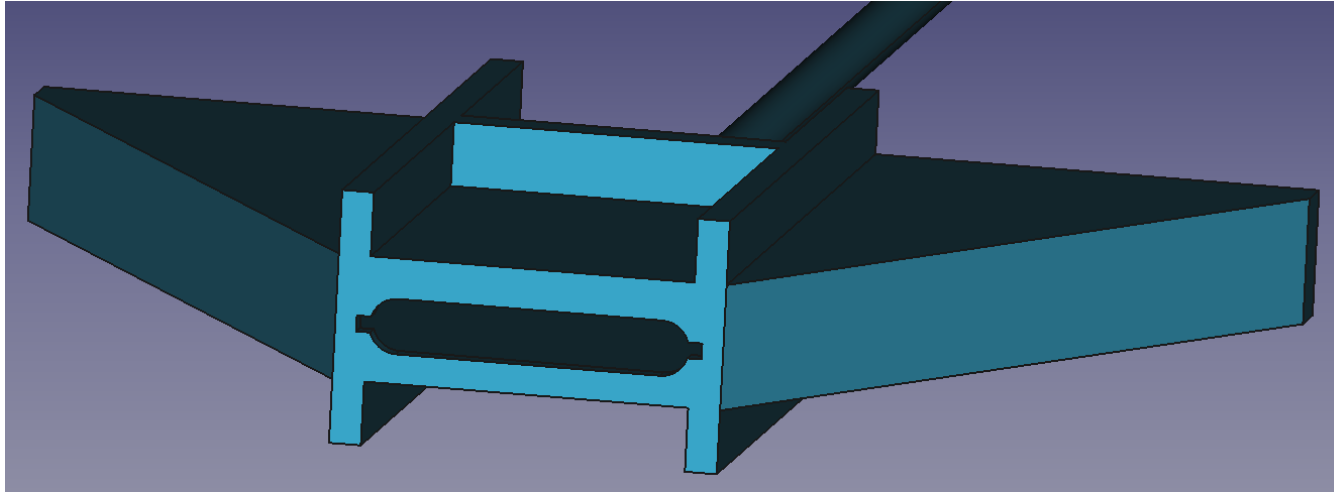
Opening in front panel of the VC



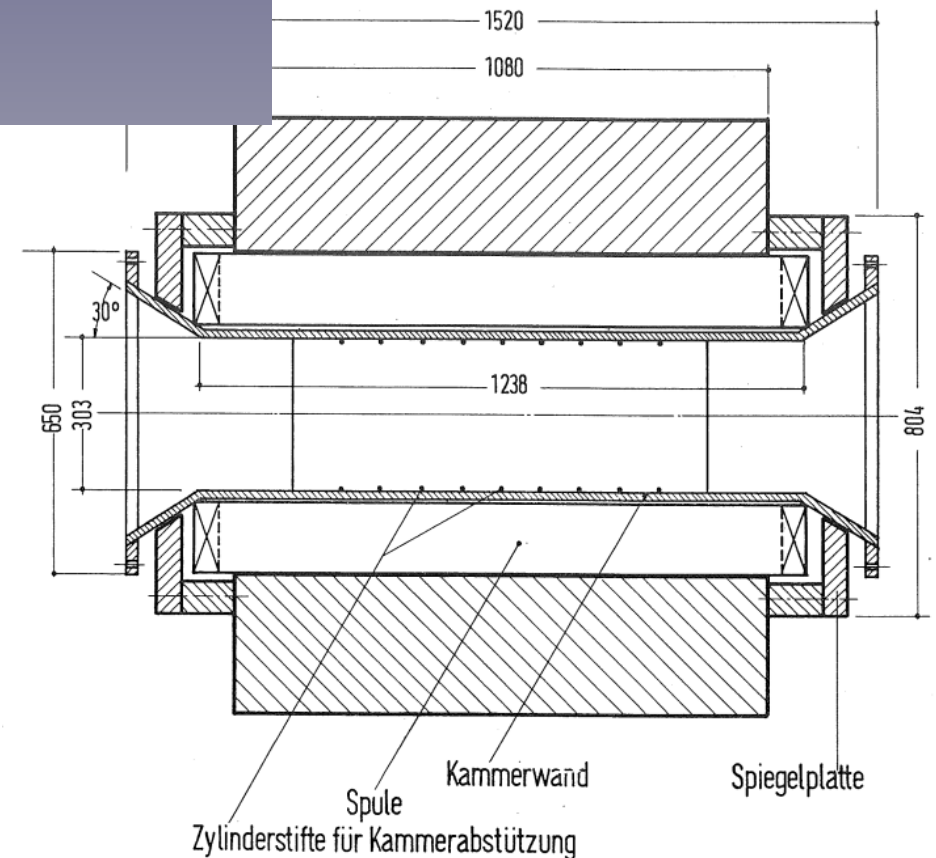
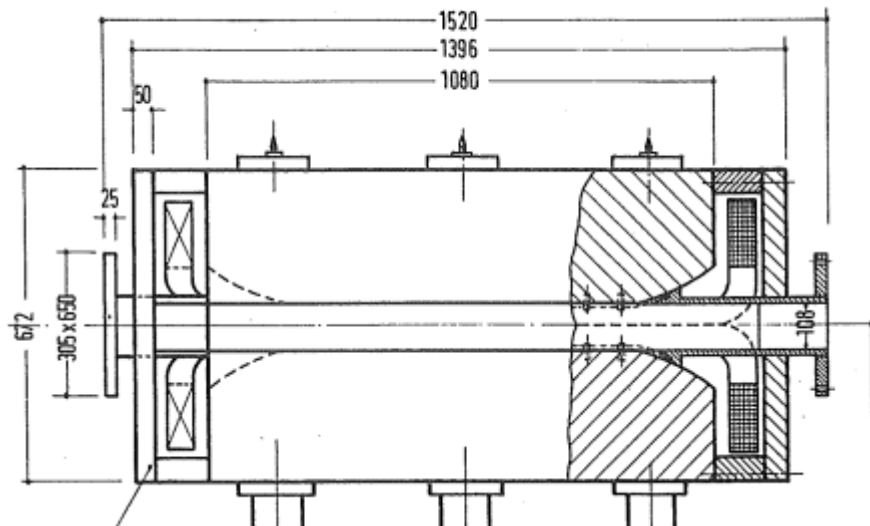
VC window

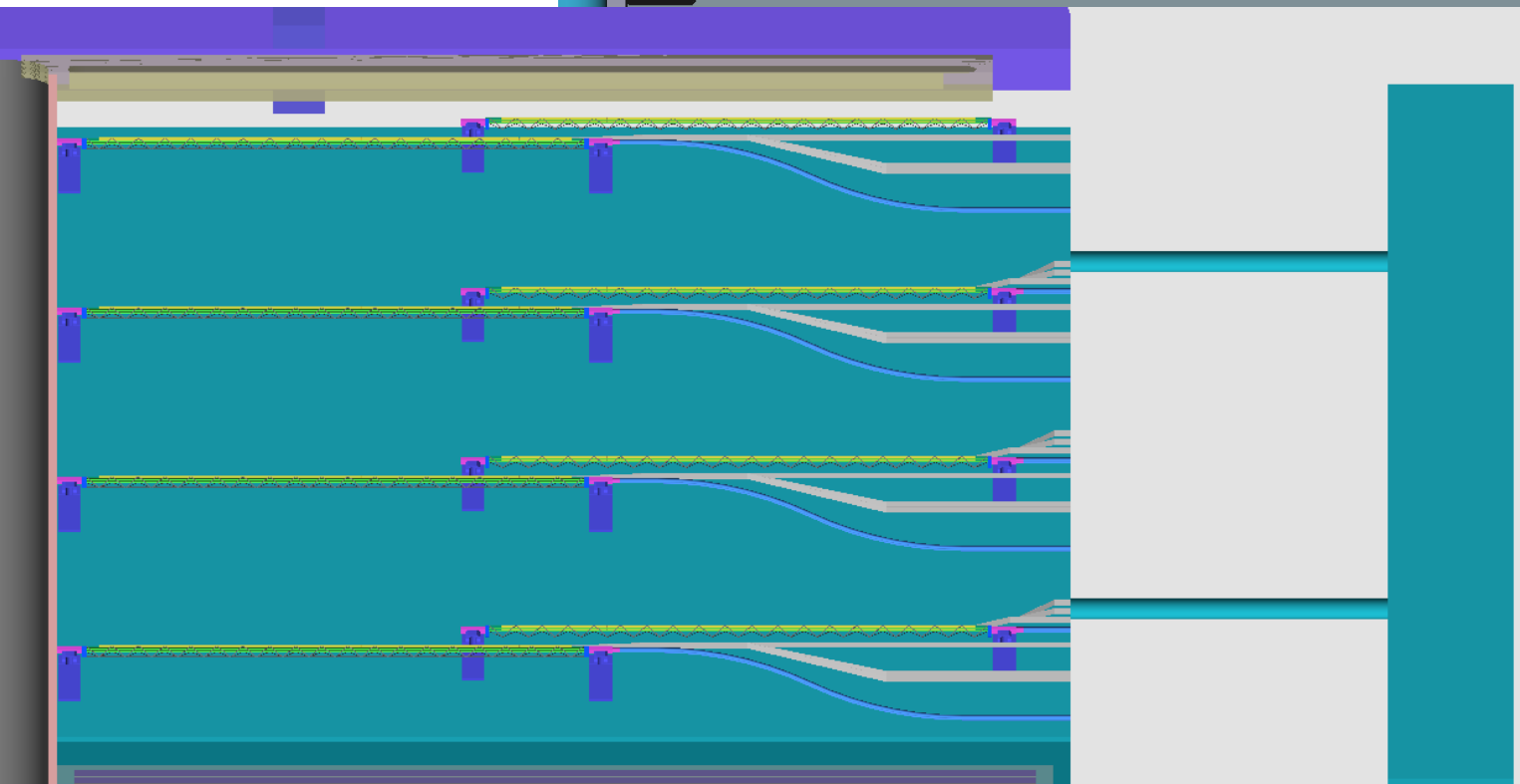
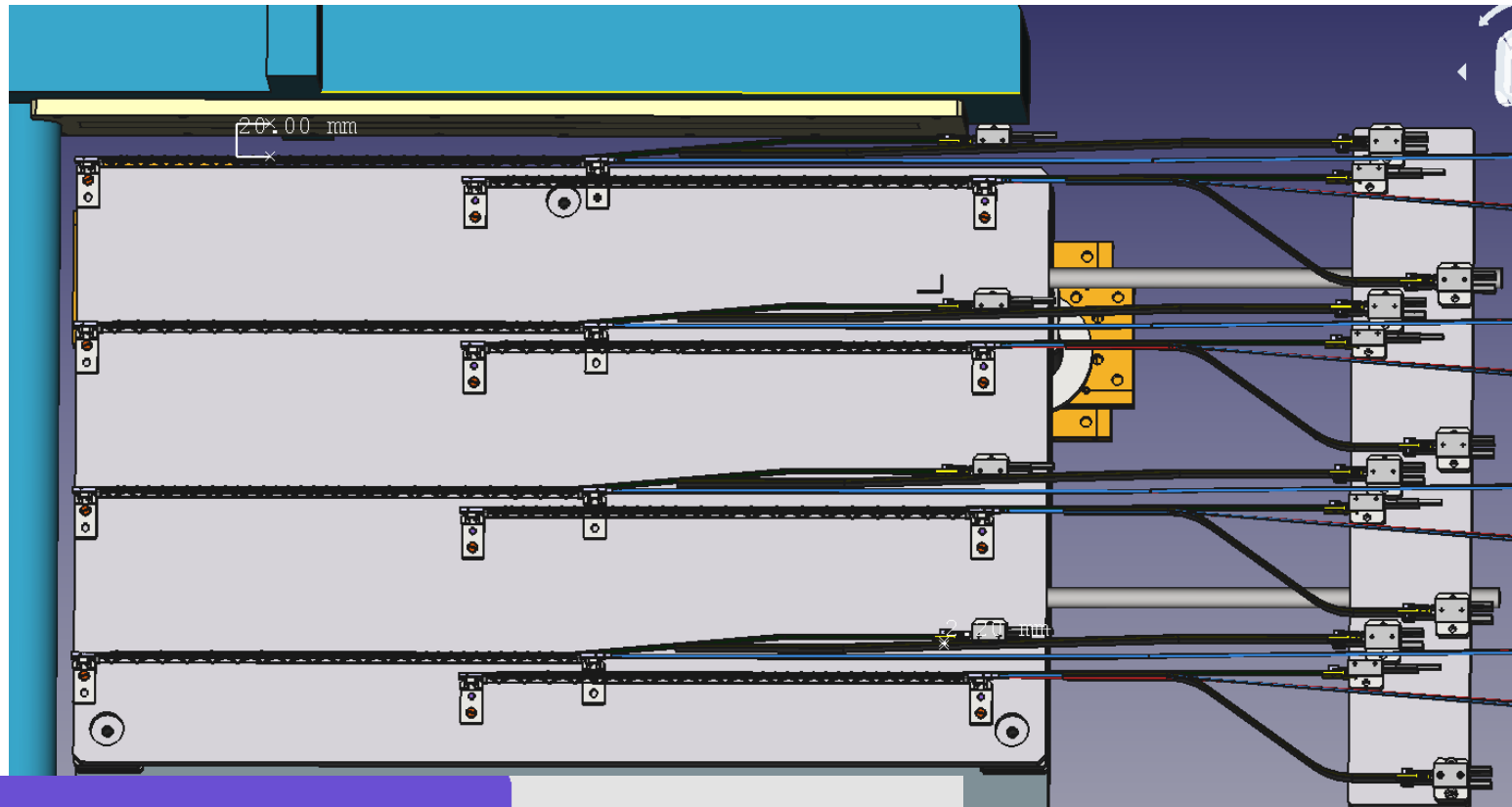


Join external and internal (in magnet) parts of VC

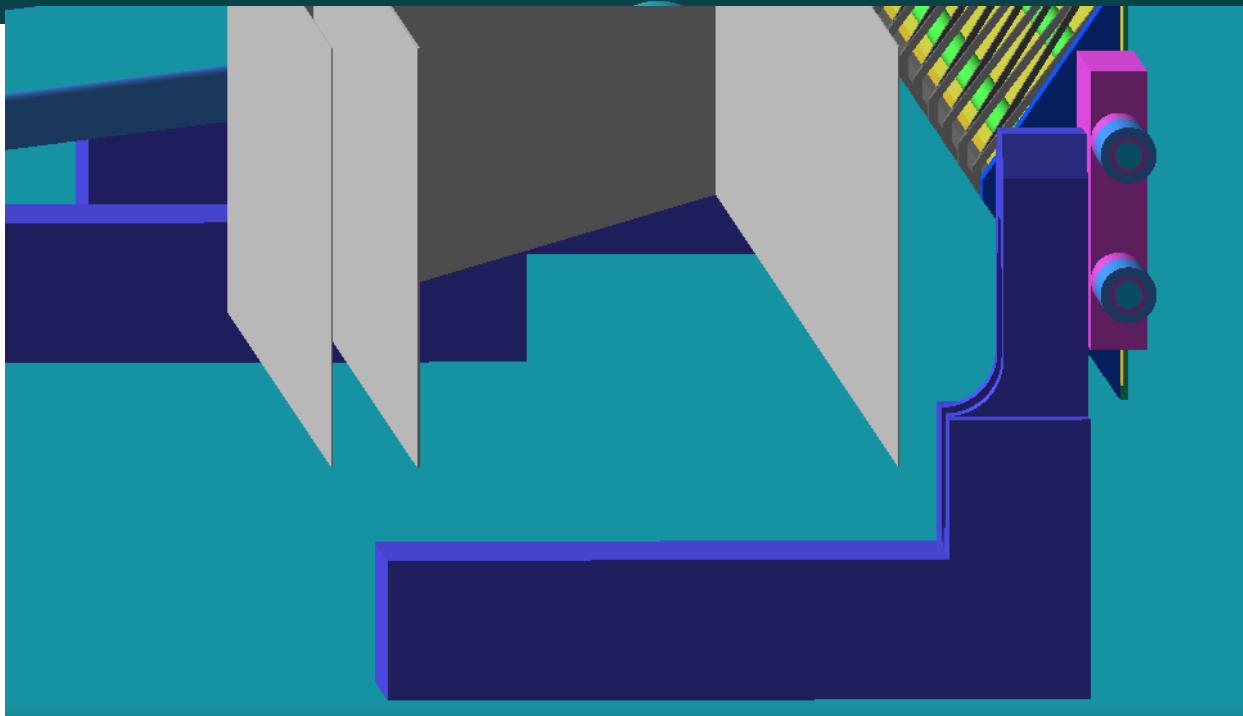
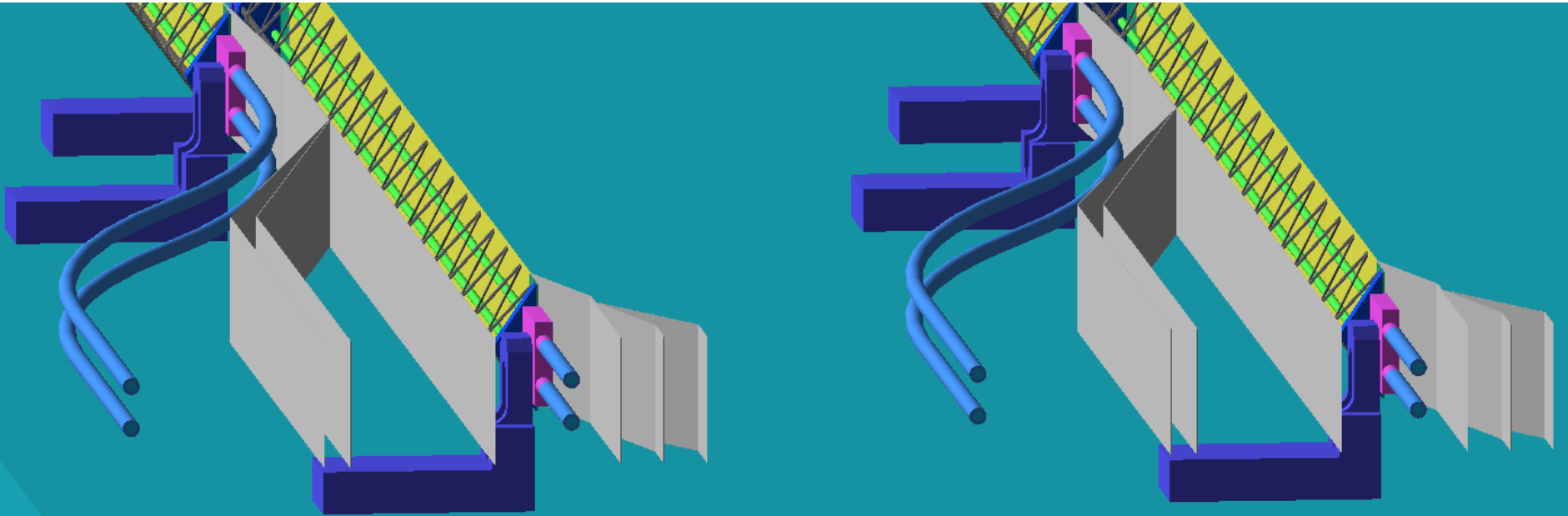


Can we use external flange and keep the space inside free?

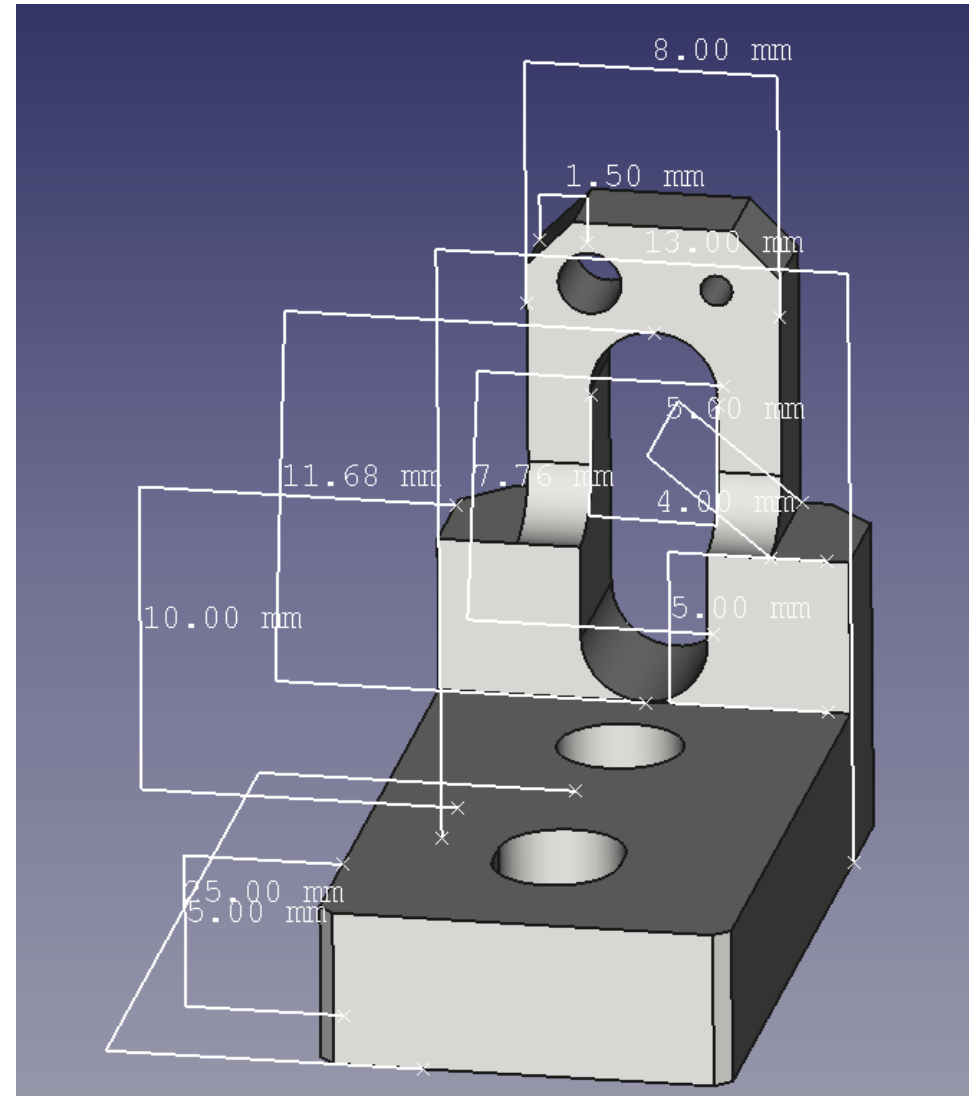
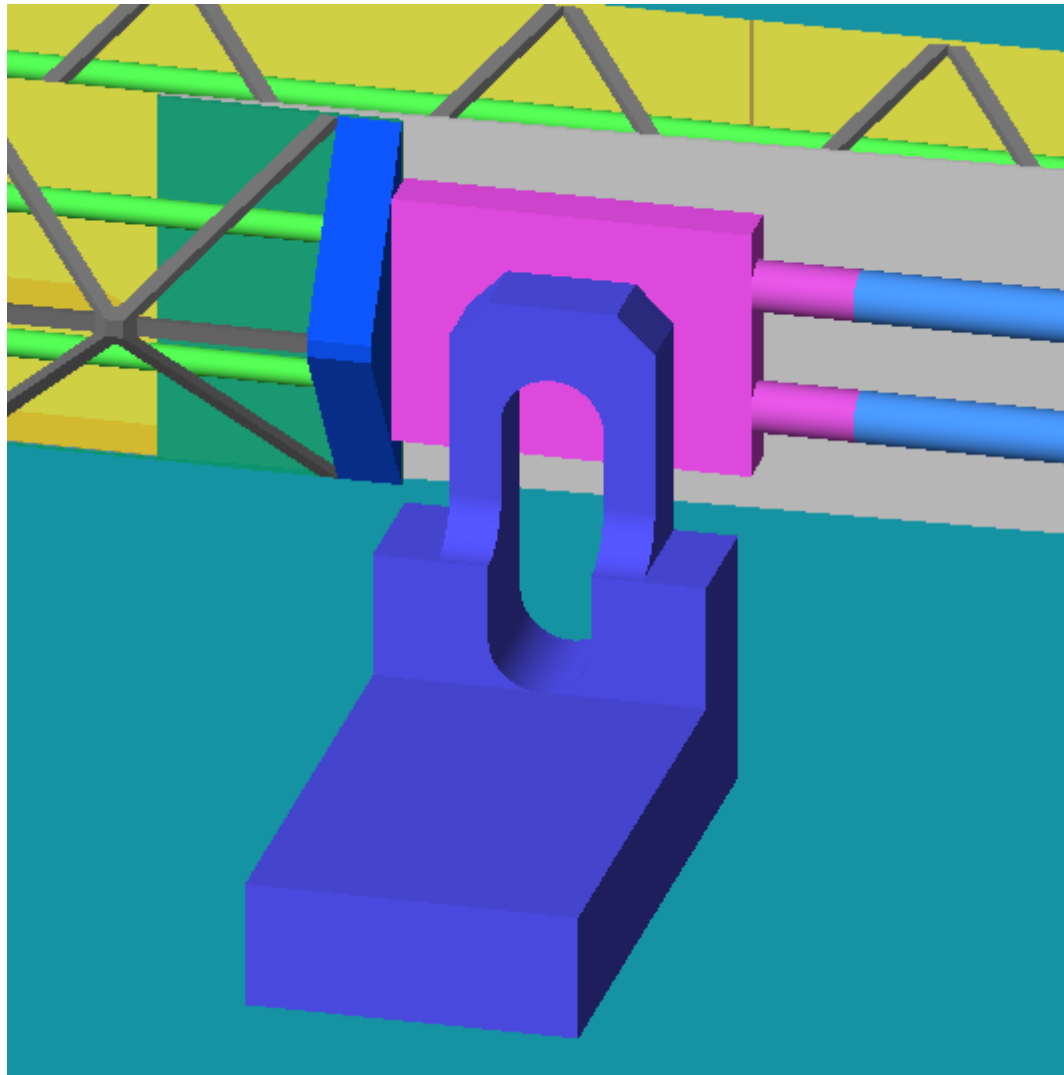




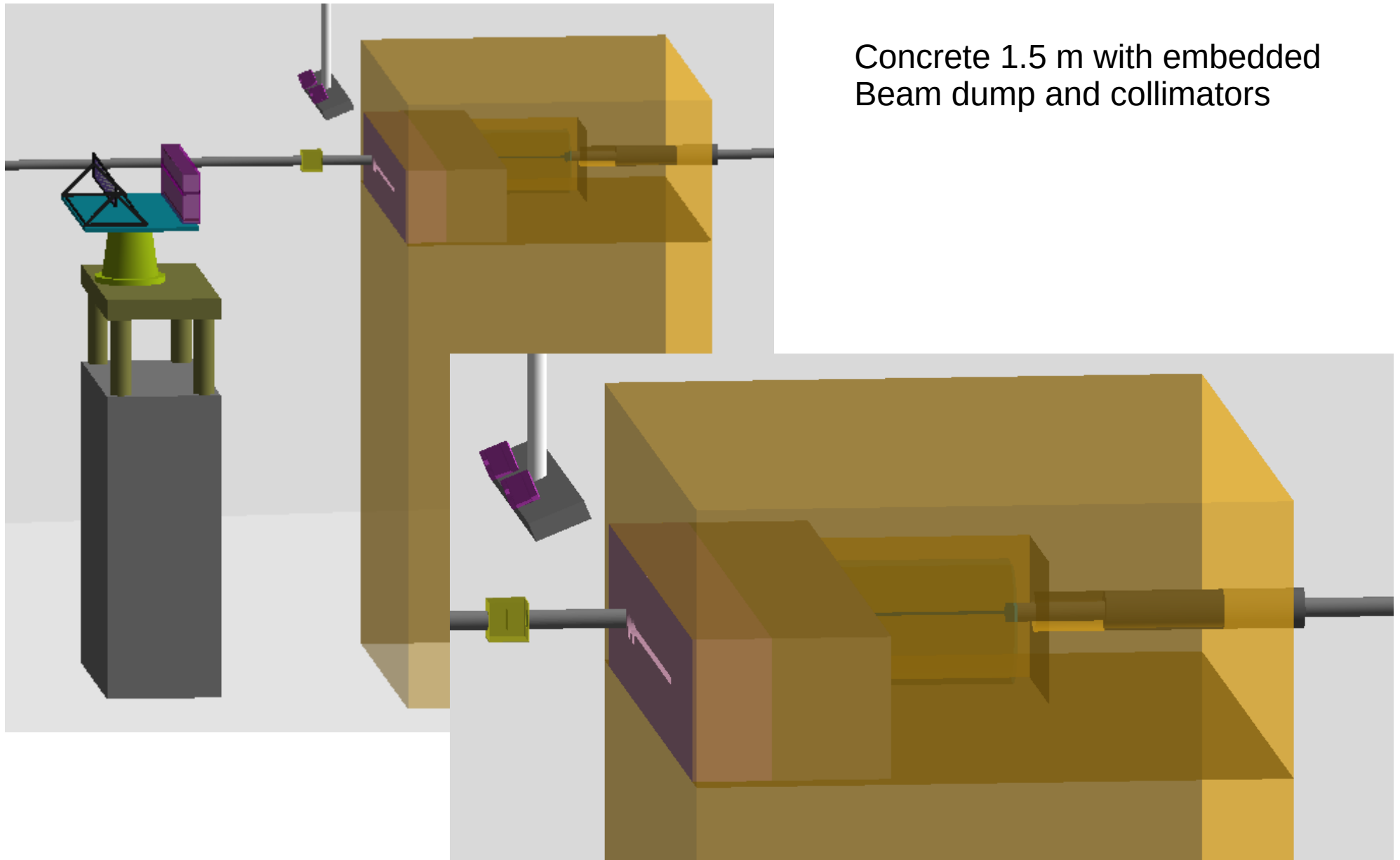
Service lines in tracking staves



Stave supporting angle

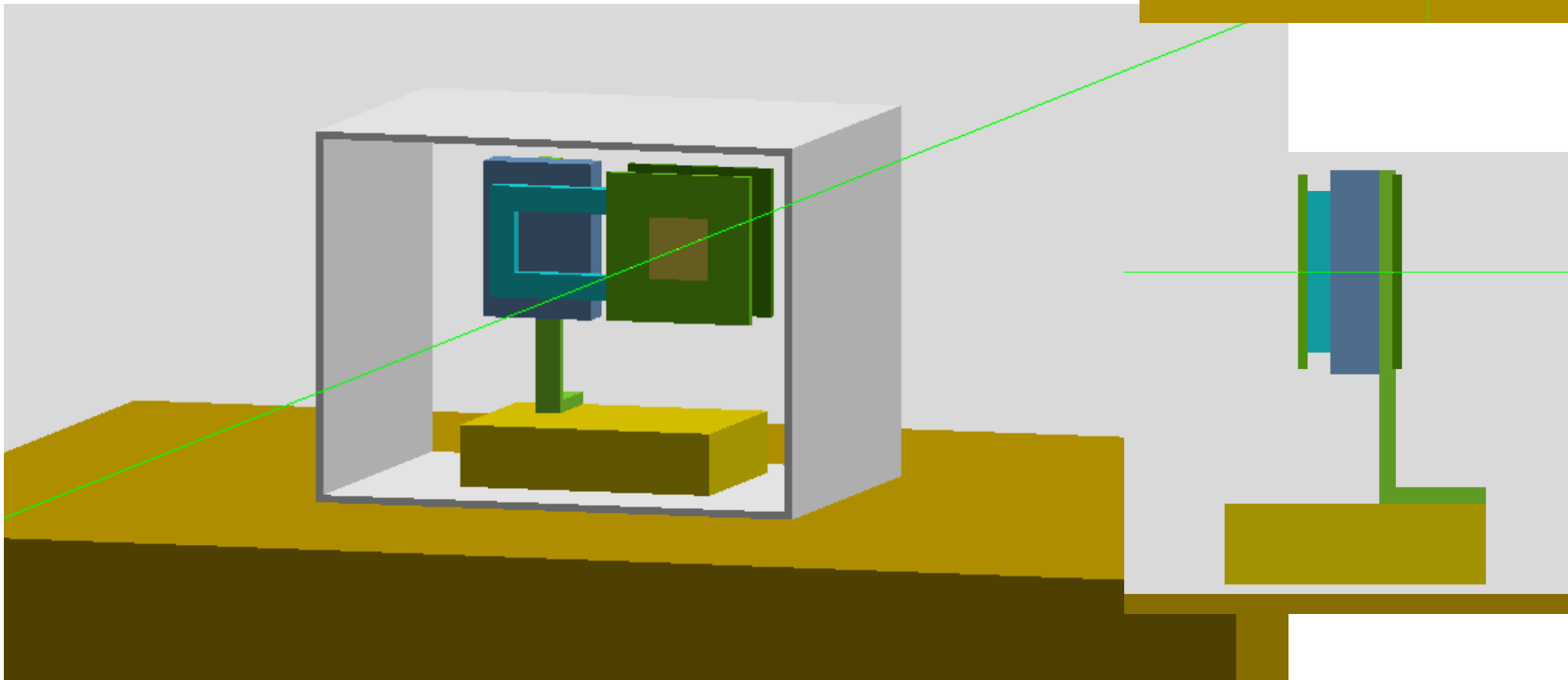
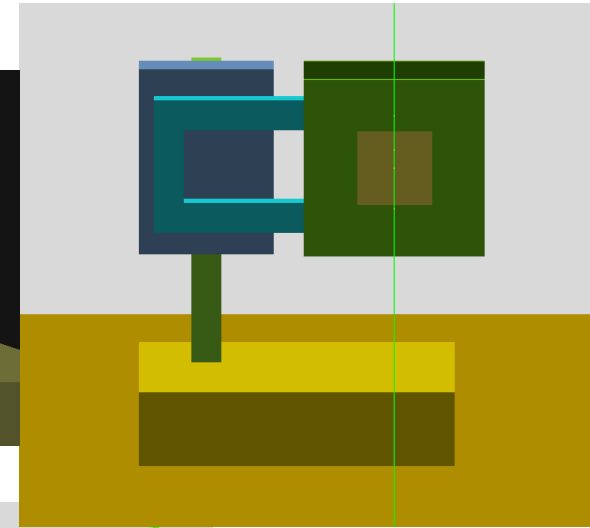
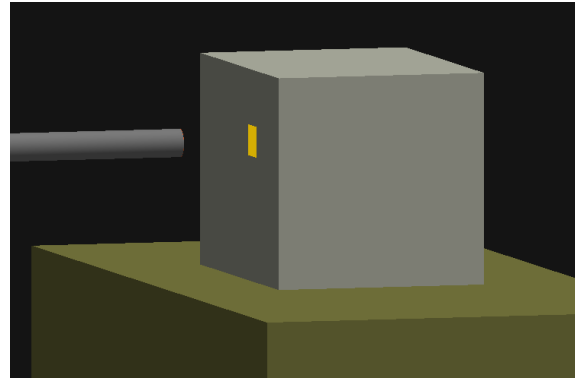


Beam dump and shielding after IP



Profiler

- Sapphire sensor 100 μm
- Uniform Al metalization 5 μm
- PCB: CF4 5 mm
- Motors: Stainless steel;
- PCB holder: Al



Summary

- Updated:
 - Shieldings
 - Supports
 - Vacuum chamber with window
 - Tracker staves (not completely)
 - Progiler
 - Magnetic field model (not merged)
 - Cherenkov and screen (John)
- Missing:
 - IP chamber
 - Target chambers (can be made similar to profiler)