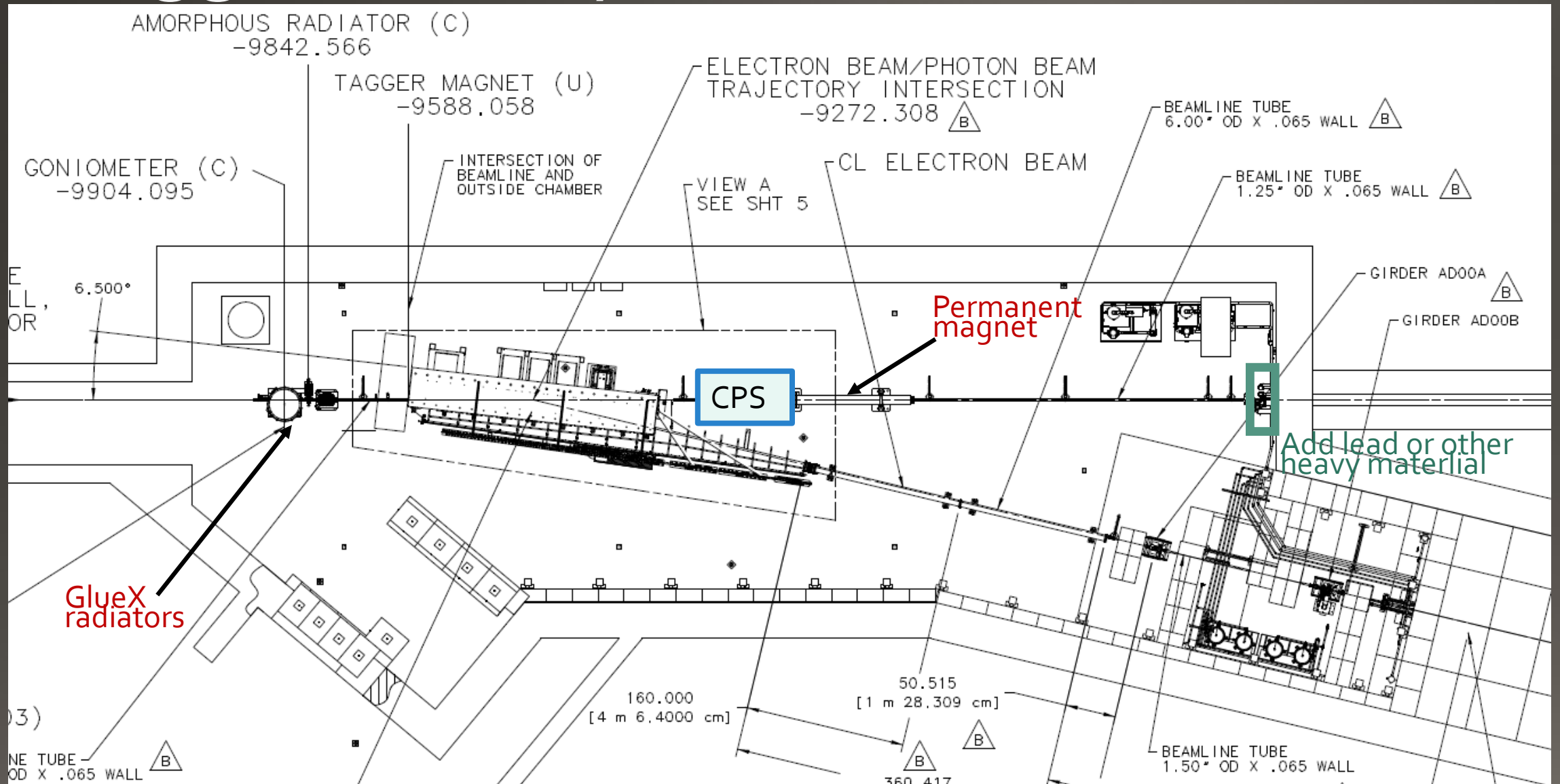


Hovanes Egiyan

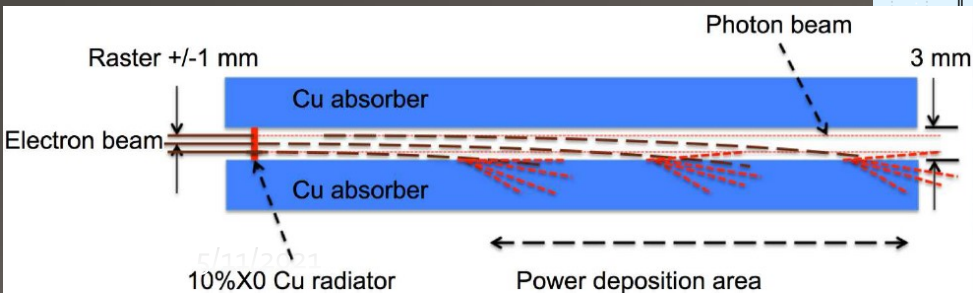
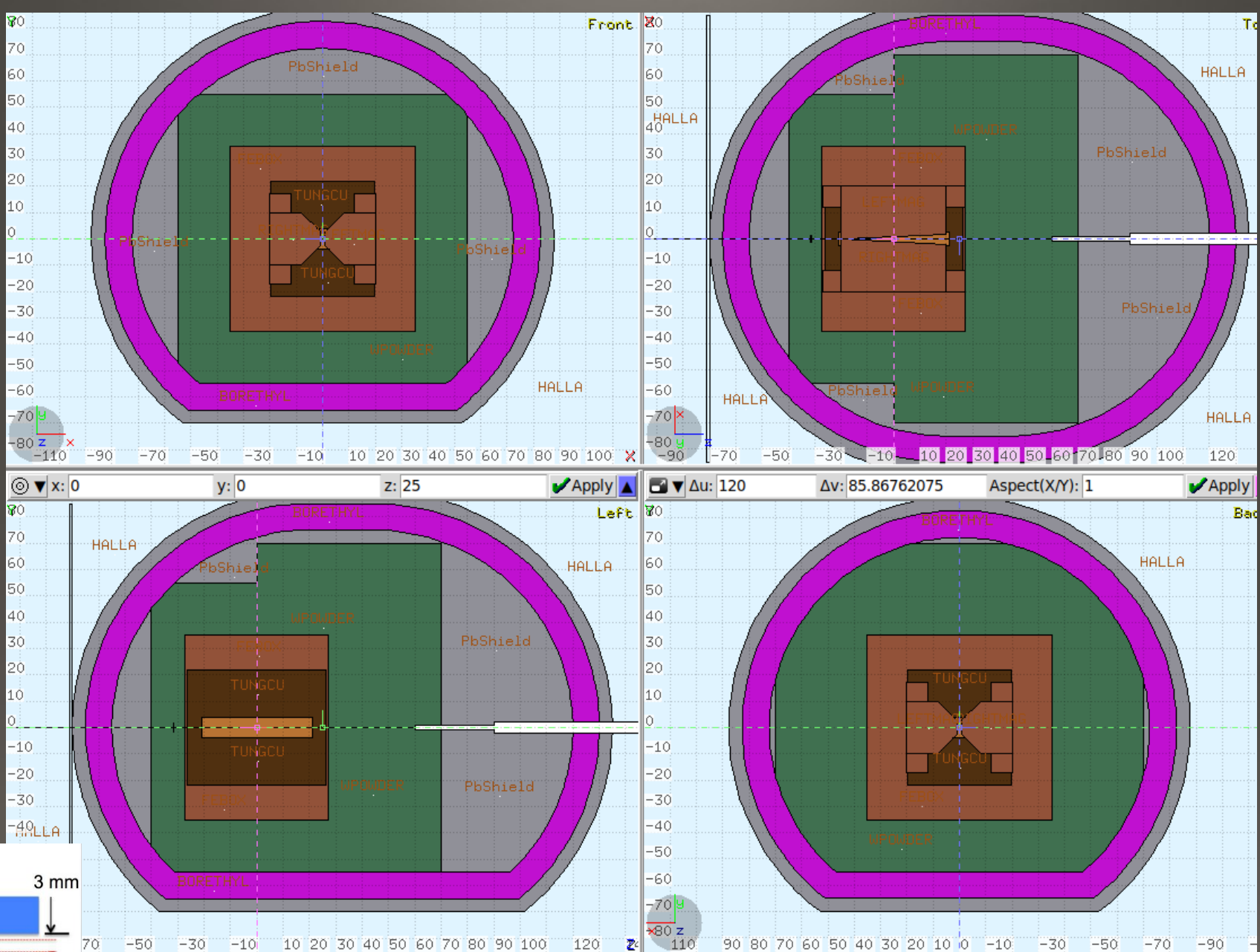
CPS Schedule

Tagger Hall Layout



Design

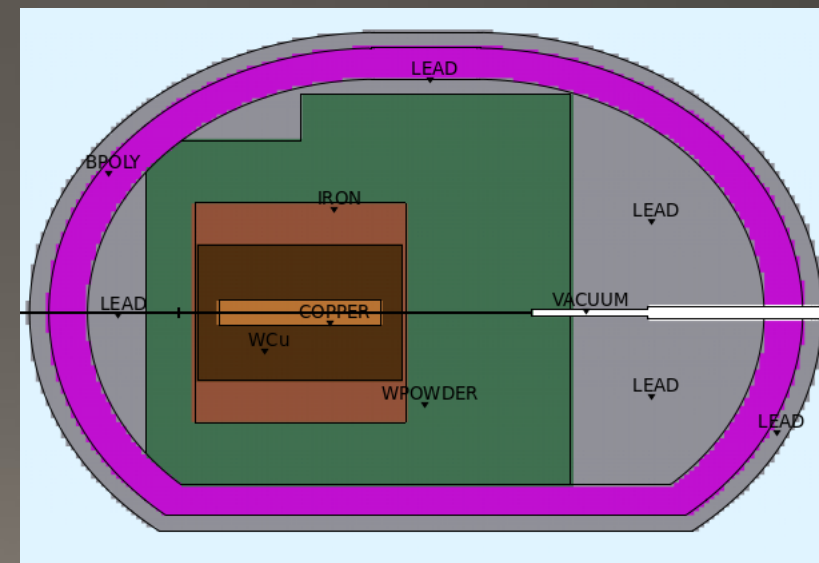
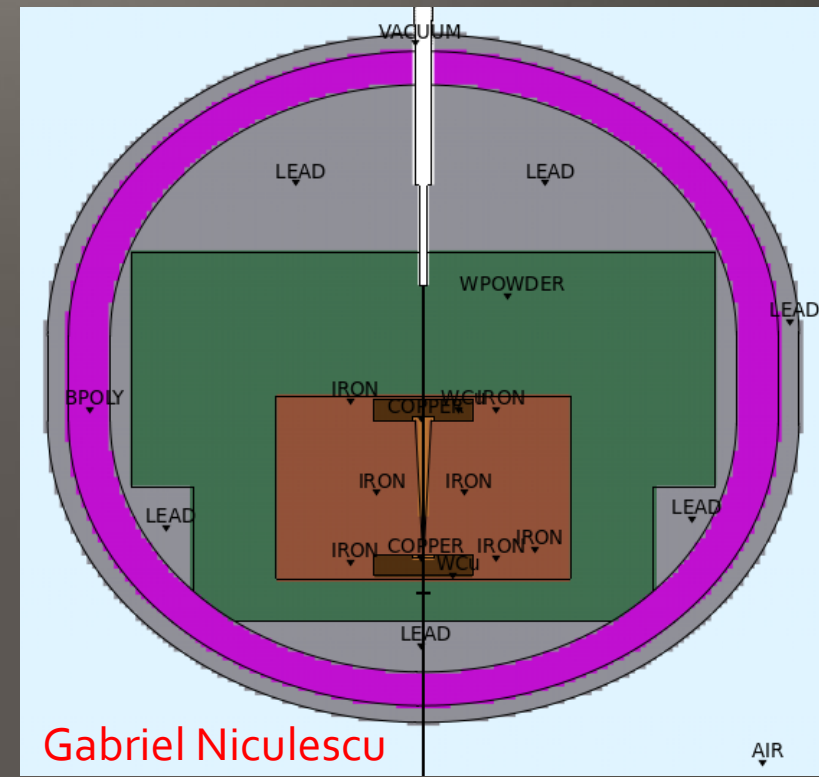
- Combine 10% RL radiator, cleanup dipole magnet and beam dump into the same device.
 - Expensive shielding, but less radiation in the hall.
- Dump the energy of the bent electron beam into a water-cooled copper core.
 - Heat dissipation needs to be controlled
- The photon beam exits the CPS assembly through a "narrow" channel at the other end.
 - Radiation leaking from the CPS proper needs to be acceptable to the lab.



Gabriel Niculescu

Design

- There is a design of the 10 kG•cm magnet coils and poles (B. Wojtsekhowski)
 - My understanding is that the magnet design is not yet final.
 - Some of the features of the magnet may need to be modified.
- G. Niculescu maintains the Hall A/C versions of CPS geometry in FLUKA input files.
 - Good point for us to start with Hall D version.
 - We got his file and studying it.
- Hall D may try various modifications
 - Try to increase the horizontal beam size and widen the copper core to handle double the deposited energy.
 - We may also try to make the magnet longer and increase vertical beam size too.
 - We will likely increase the entrance hole to accommodate beam size.
 - We should consider reducing the exit hole size (>4cm in diameter now).
- We also need to plan on how to tune beam into the CPS opening.
 - May need to have a girder with a stripline BPM just before of CPS, or a wire scanner very close to the front of CPS.



Hall C CPS

- Magnet has a conceptual design
 - There is no engineering design
- The shielding has a conceptual design (Cu+W, Pb, and W parts)
 - There is a plan for stacking of the shielding
 - There is no complete engineering design
- The copper core is still being investigated
 - The temperature is most likely is not a problem
 - Deformation due to the stresses from heat is being mitigated by splitting the copper core into multiple plates.
 - Deformation of the copper core from radiation is expected
 - There is no one at this time studying it.
- Deformation effects will be further studied by Bogdan in July
 - Manpower issue is delaying these studies
 - Bogdan wants us to help with the radiation effects
 - Meanwhile , the engineering design is ongoing

Schedules

- There is no solid schedule for Hall C CPS.
 - Some issues with the copper insert needs investigation
- The Hall C plan is to order the magnet sometime in FY2022
 - Assumes no problems found with copper insert deformation requiring magnet modifications.
 - Construction is expected to take 2 or 3 year.
 - Maybe ready for running by 2024 or 2025.
- The deformation of the copper insert due to radiation or heating could be accumulative.
 - Still not clear how large the deformations are going to be .
 - It may be worse for Hall D if we run at the same beam current on identical CPS.
 - Increasing the gap vertically and making the magnet and the insert longer should help reducing these effects.
 - This would mean major redesign of the magnet and probably the rest of the CPS.

Summary

- Deformation of the copper insert are not fully studied
- Hall C schedule is not solid
 - About 3 months late
- The temperature of the copper insert is not a problem in Hall C
 - For Hall D doubling the horizontal beam size should compensate the higher current.
- If the deformation effects of Cu insert are significant, then copying Hall C design might somewhat risky for a longer experiment.
 - Can use large free space to reduce the heat and radiation dose density.
 - Will require magnet redesign and shielding adjustment
 - Means manpower