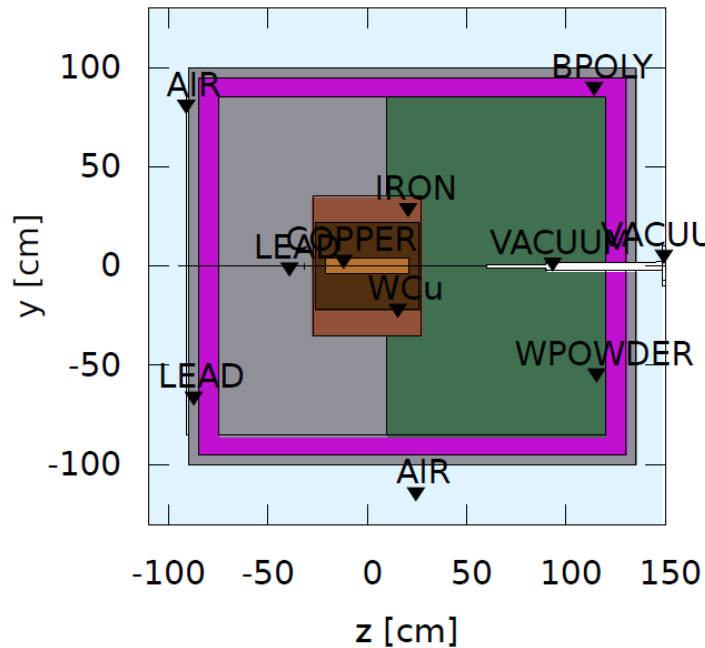
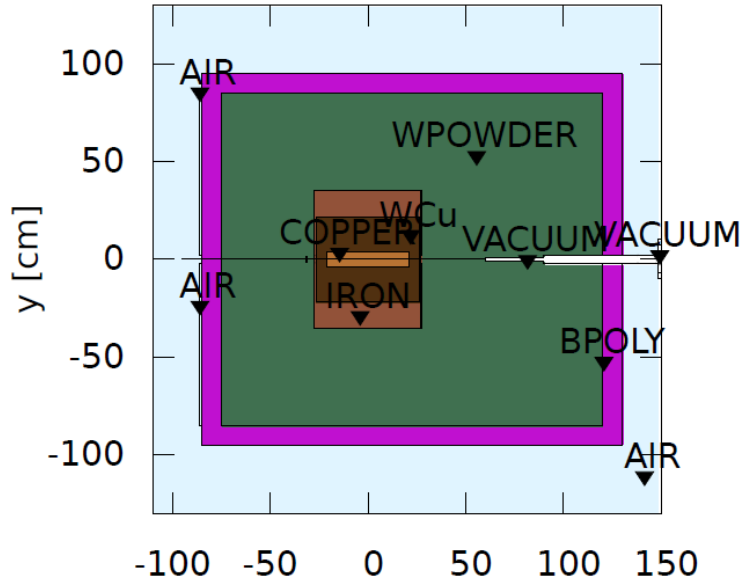


CPS “conclusions”

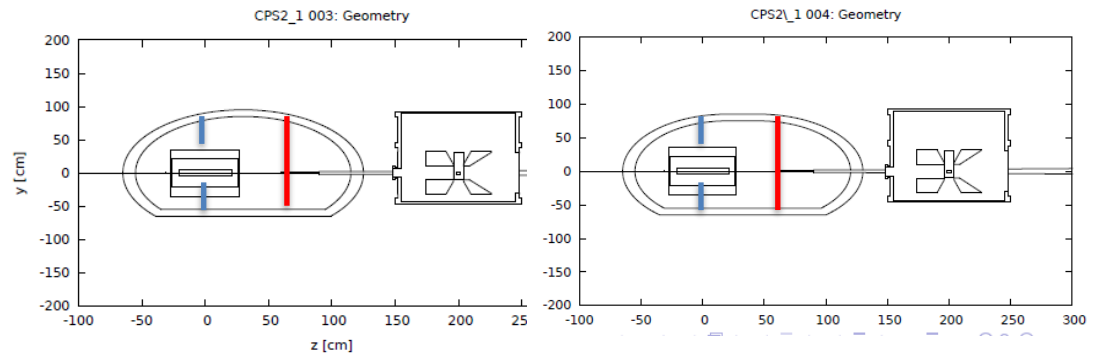
Note: “Comparisons” refers to Gabriel’s slides of Friday

1. Comparisons (I): Comparing all W powder vs all Pb shows W much more effective to reduce prompt radiation. One can see that both outside the CPS box as inside the CPS box (Pb case is “all black”). Conclusion: need W in the central area.
2. Comparisons (II and I): having Pb instead of W upstream of $z = 0$ makes the prompt radiation a bit worse laterally outside the CPS, maybe a factor of ~ 3 . If one goes to $z = 10, 20, 30,$ or 40 one sees slowly more prompt radiation “leaking out” and activation levels in the forward hemisphere growing. Conclusion: $z = 0$ is good compromise.
3. Comparisons (VIII): Adding a Pb layer on the outside helps to further reduce prompt radiation (presumably as the energies are already low for the Pb to be more effective) and greatly reduces the activation levels. At appearance, this may get a reduction of a factor of ~ 3 in prompt radiation levels laterally outside the CPS, balancing point 2 above. Conclusion: always add a 5 cm layer of lead outside the poly.
4. Comparison (VII): The W powder football has much less prompt radiation laterally out than the Russian doll (10, 40). This implies we likely need W laterally out to the poly layer at least in the region for $z > 0$. The activation levels for the W powder football are much higher than for the Russian doll (10,40). That simply reinforces we need some Pb layer (the 5 cm Pb skin).
5. Comparison (VI): The Russian doll (10,20) version allows more of the source radiation that we try to capture with W to “leak out”. One can see that from elevated prompt radiation levels between $z = 50$ and 200 laterally out. The (10,40) seems safer, so extending the W up to 40 cm beyond the magnet may suffice, up to $z \sim 70$.

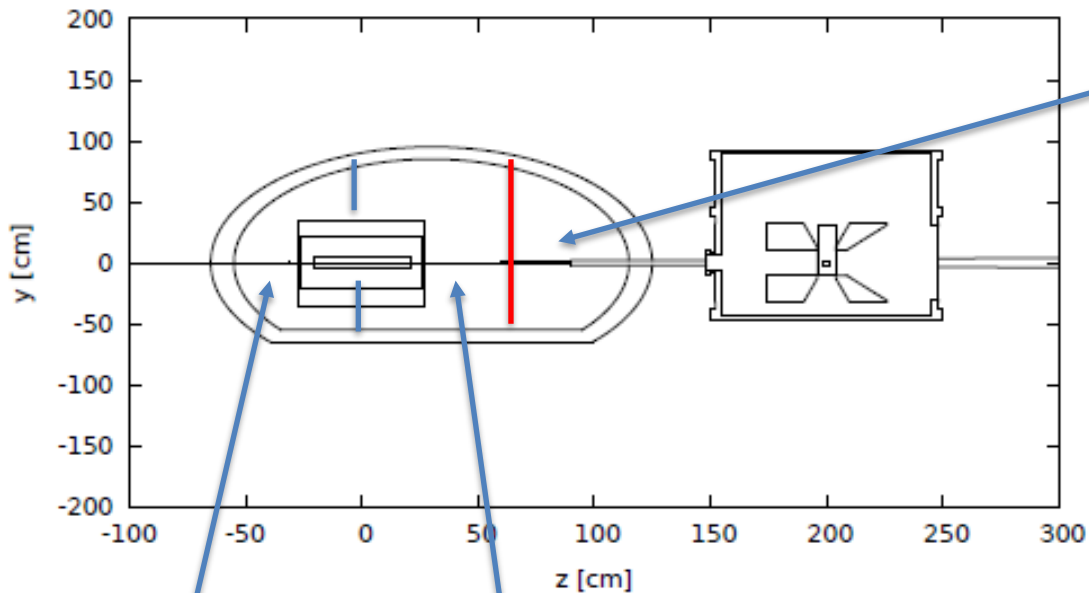
CPS configurations



1. CPS 2_1 001 geometry (Cadillac), all W with poly layer – just the default to compare with
2. CPS2_1 001 geometry (Chimera 1 5skin) (i.e., Pb before $z = 0$, W after $z = 0$, a poly layer and then a 5 cm Pb skin)
3. CPS 2_1 003 geometry: Cut sphere with same, Pb before $z = 0$, W after $z = 0$, a poly layer and then a 5 cm Pb skin
4. CPS 2_1 004 geometry: Football with same, Pb before $z = 0$, W after $z = 0$, a poly layer and then a 5 cm Pb skin
5. CPS 2_1 004 geometry: Football with same, Pb before $z = 0$ and after $z = 70$, a poly layer and then a 5 cm Pb skin
6. Same for CPS 2_1 003 geometry



CPS2_1 003: Geometry



W powder or Pb

Always:
10 cm of poly
5 cm of Pb skin

W powder

CPS2_1 004: Geometry

Pb

