# $K^0_L$ CPS Meeting Nov 28’2022

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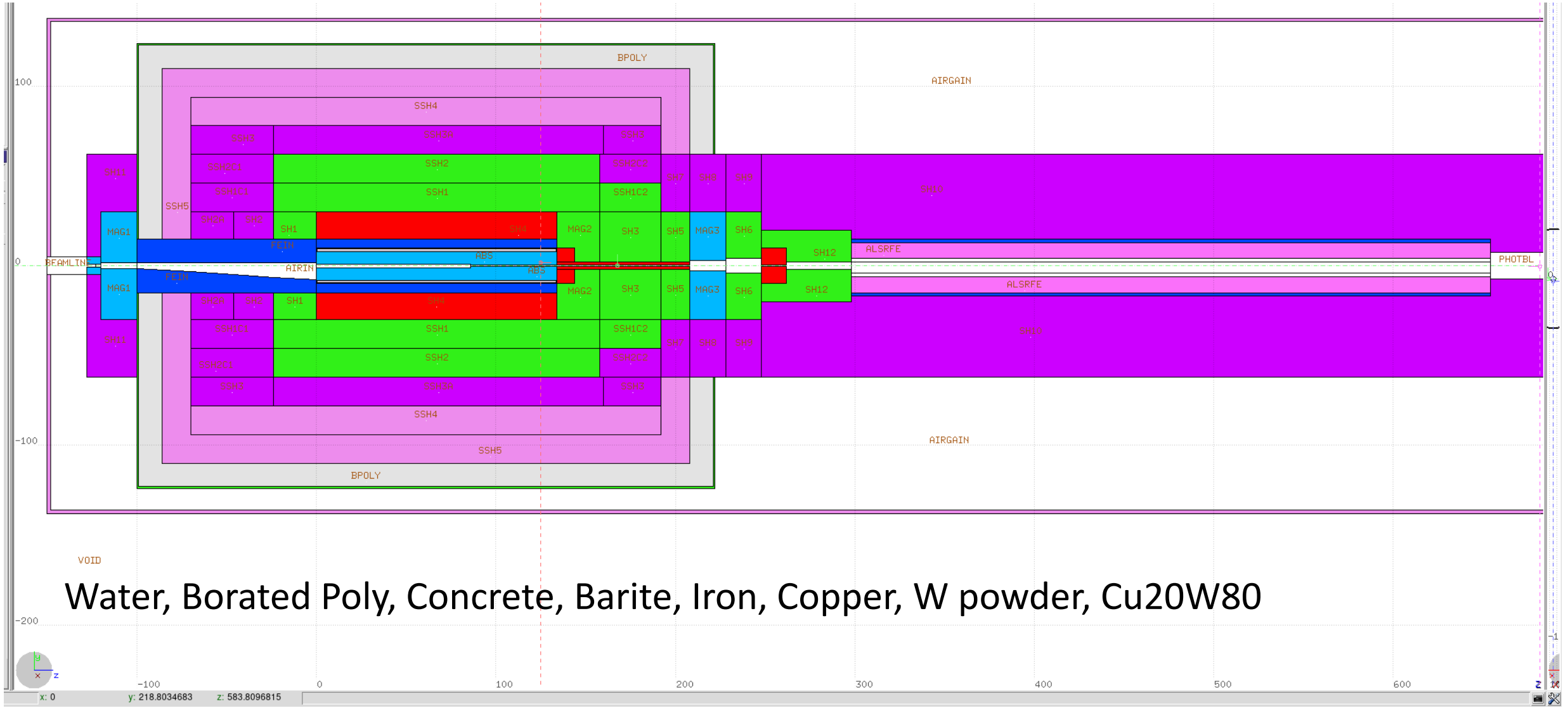
# Conceptual Design Update

- Updated conceptual design is ready
- 10 mm diameter beam line
  - Decrease cascade intensity in the beam line
  - Hall D operations after KL
- Magnets taken out of high magnetic field
- Introduce beam interaction chamber in the absorber (20 mm dia)
  - Decreases cascade intensity in the beam line
- Charged particle trap after the second magnet
- The HD magnet (3.56 m, 0.23T) as the second stage of beam cleanout
- Shielding adequate (but not optimized)

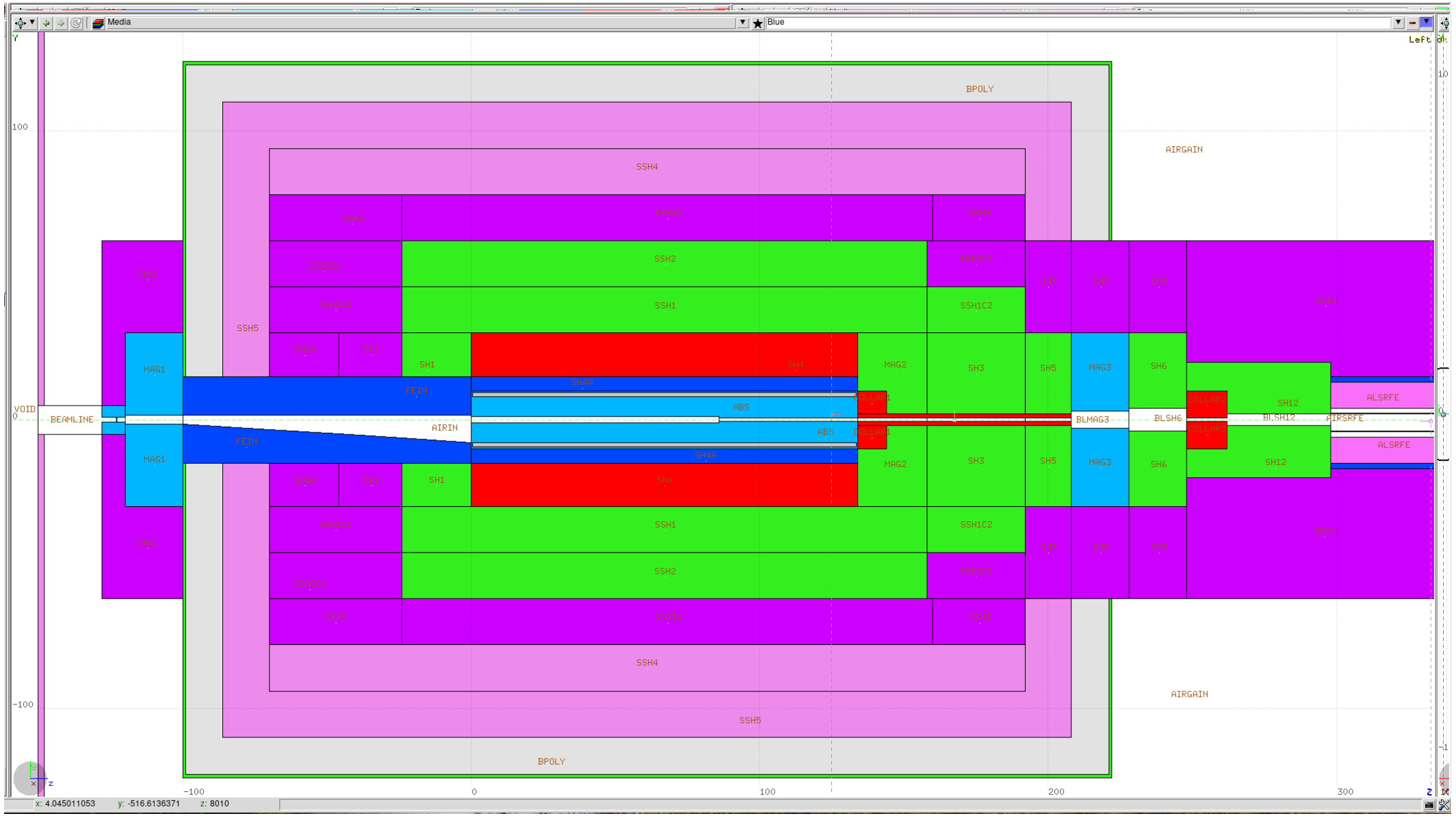
# CPS Conceptual Model, Nov. 28 2022

Color corresponds to material density

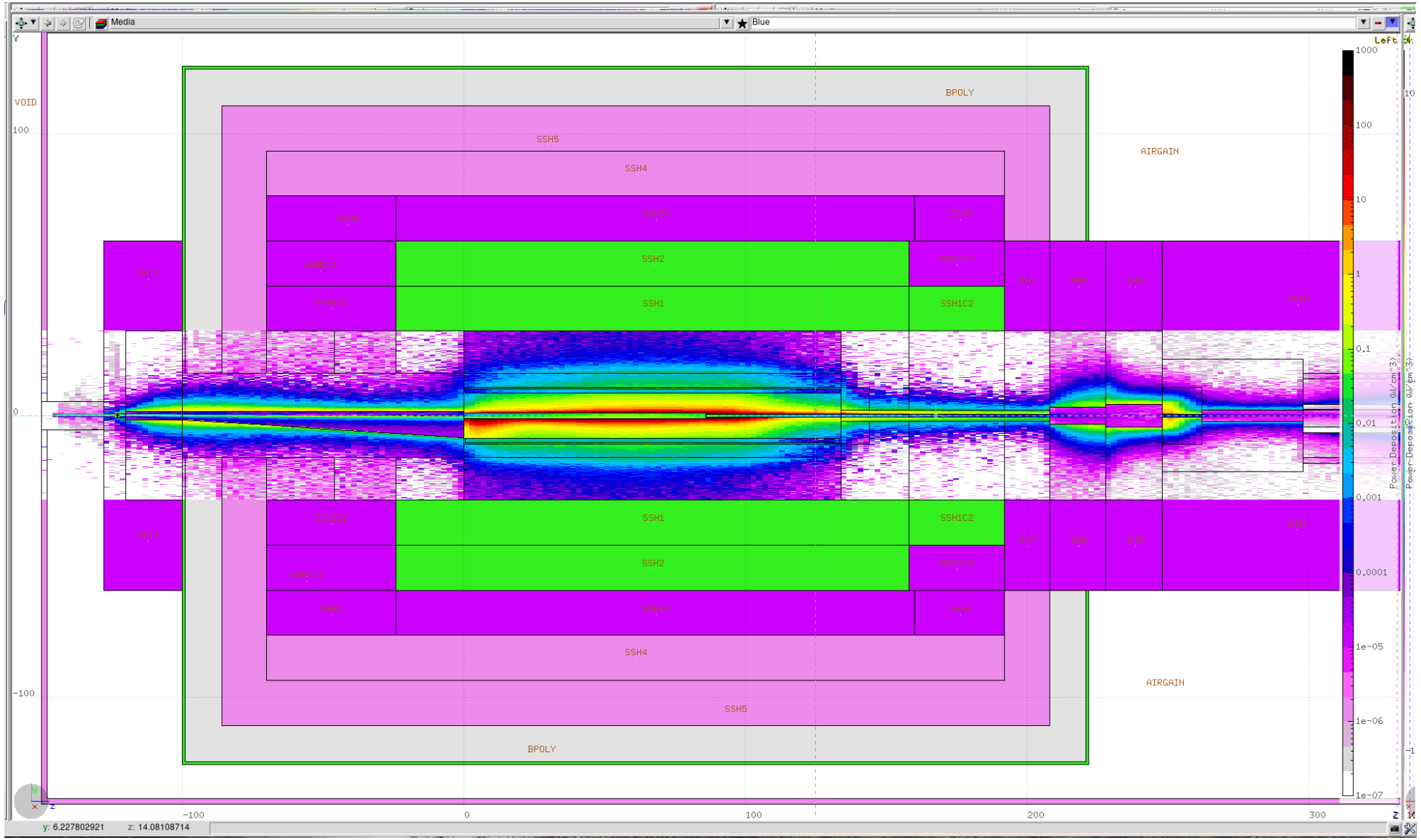


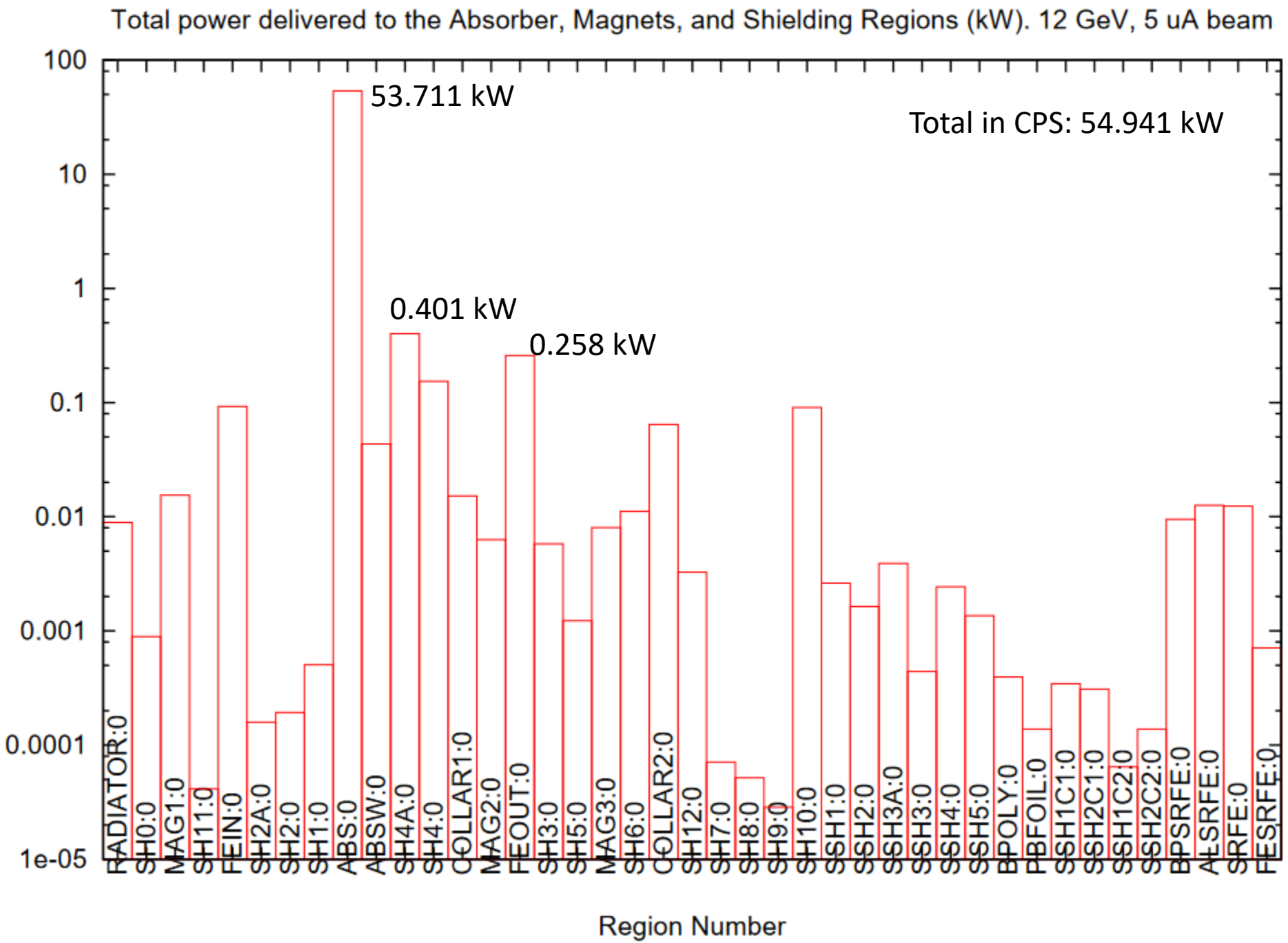

Water, Borated Poly, Concrete, Barite, Iron, Copper, W powder, Cu20W80

# CPS Detail

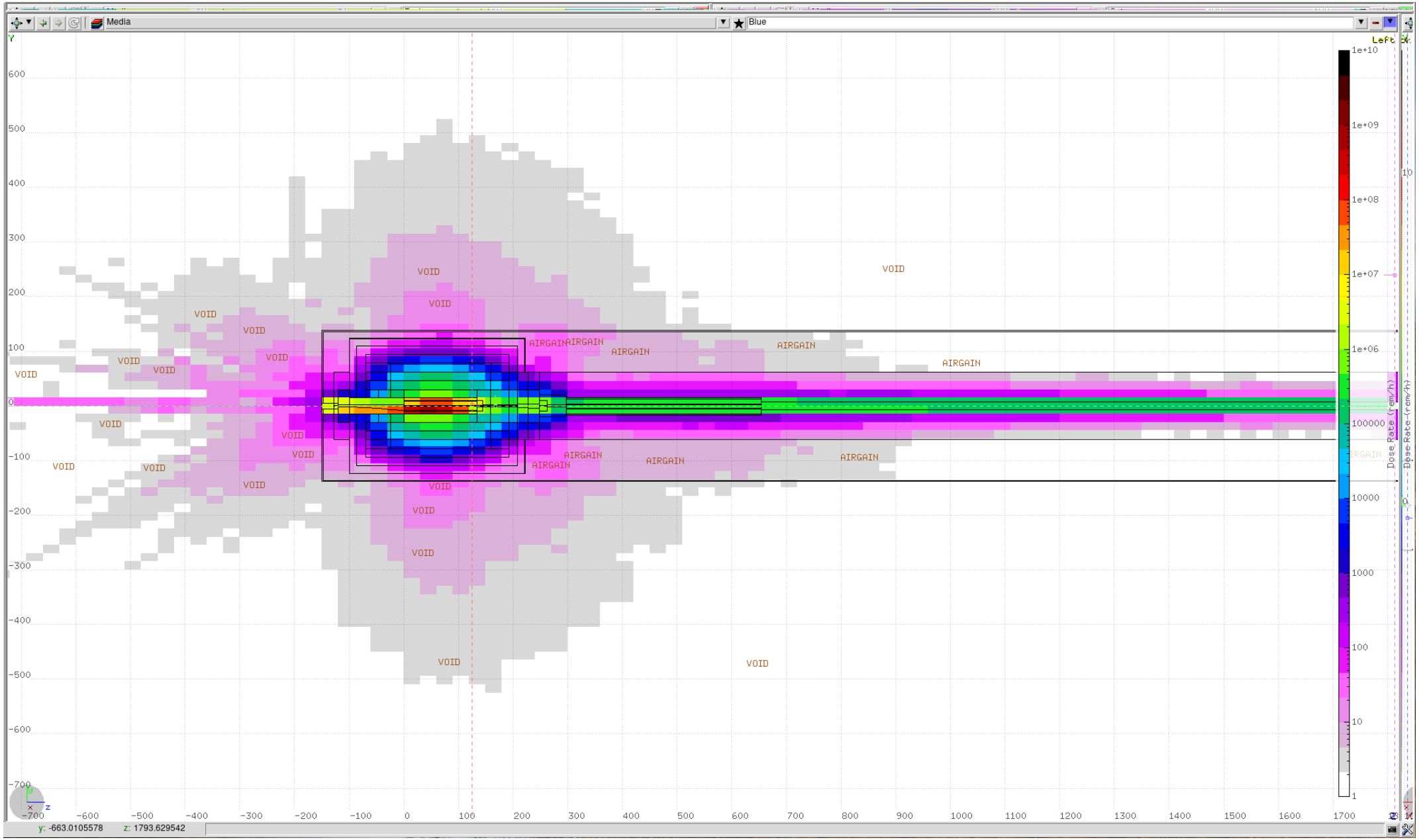

Media
Blue
Left
BPOLY
AIRGAIN
SSH4
SSH3
SSH3A
SSH2
SSH2C1
SSH2C2
SSH1
SSH1C1
SSH1C2
SSH5
SH10
SH7
SH8
SH9
SH2A
SH2
SH1
SH4
SH4A
MAG1
MAG2
MAG3
SH3
SH5
SH6
SH12
ALSRFE
AIRSRFE
BLSH12
BLMAG3
BLSH6
FEIN
ABS
AIRIN
BEAMLINE
VOID
100
0
-100
-100
0
100
200
300
10
-1
x: 4.045011053
y: -516.6136371
z: 8010

# Power deposition in the central core (W/cm$^3$)

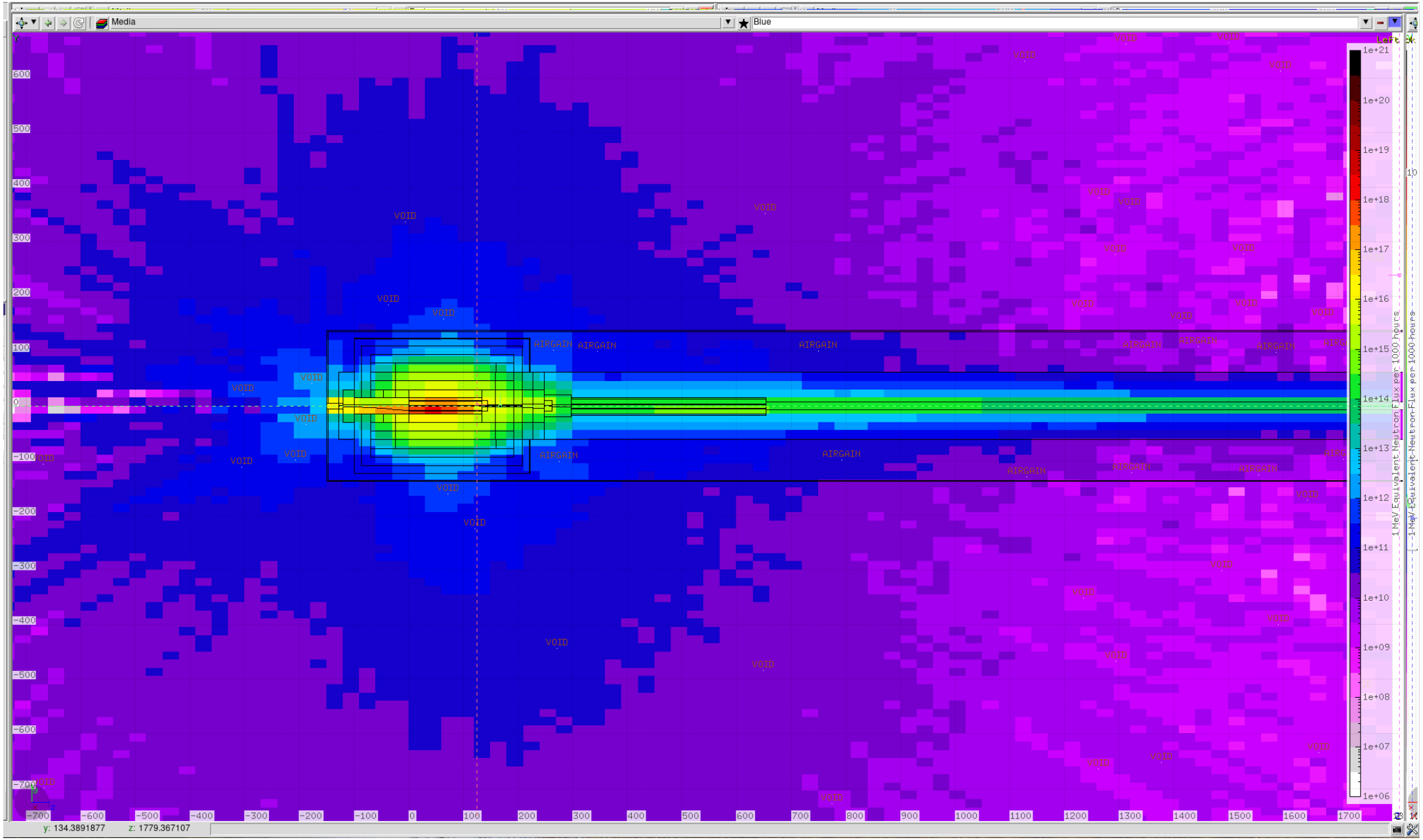



Total power delivered to the Absorber, Magnets, and Shielding Regions (kW). 12 GeV, 5 uA beam
53.711 kW
0.401 kW
0.258 kW
Total in CPS: 54.941 kW
100
10
1
0.1
0.01
0.001
0.0001
1e-05
RADIATOR:0
SH0:0
MAG1:0
SH11:0
FEIN:0
SH2A:0
SH2:0
SH1:0
ABS:0
ABSW:0
SH4A:0
SH4:0
COLLAR1:0
MAG2:0
FEOUT:0
SH3:0
SH5:0
MAG3:0
SH6:0
COLLAR2:0
SH12:0
SH7:0
SH8:0
SH9:0
SH10:0
SSH1:0
SSH2:0
SSH3A:0
SSH3:0
SSH4:0
SSH5:0
BPOLY:0
PBFOIL:0
SSH1C1:0
SSH2C1:0
SSH1C2:0
SSH2C2:0
BPSRFE:0
ASRFE:0
SRFE:0
FESRFE:0
Region Number

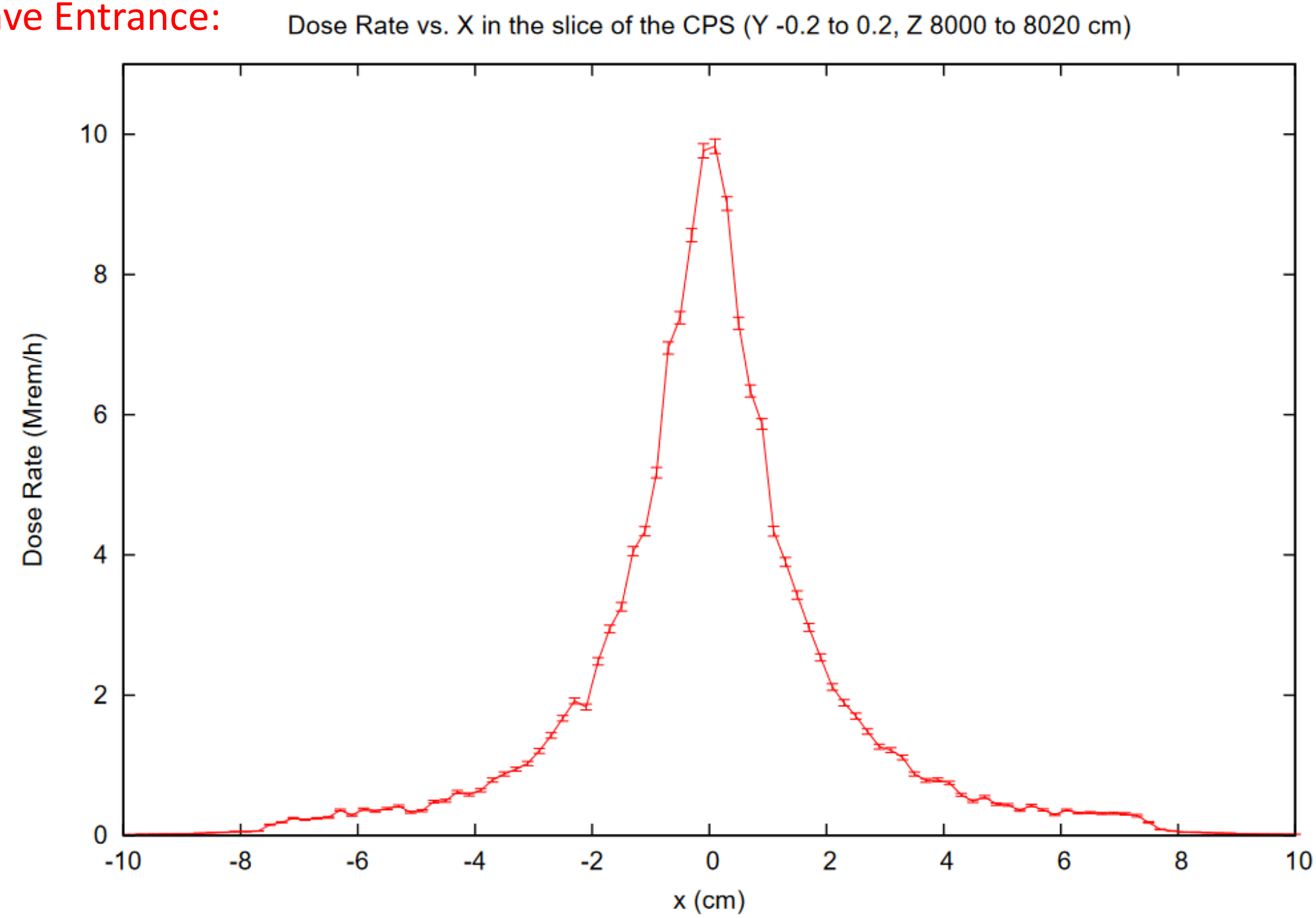
# Dose Rates in the Tagger Enclosure



# 1 MeV Neutron Equivalent flux in the Tagger Enclosure



# Cave Entrance:



# Cave Entrance: