

# KLF Design Meeting

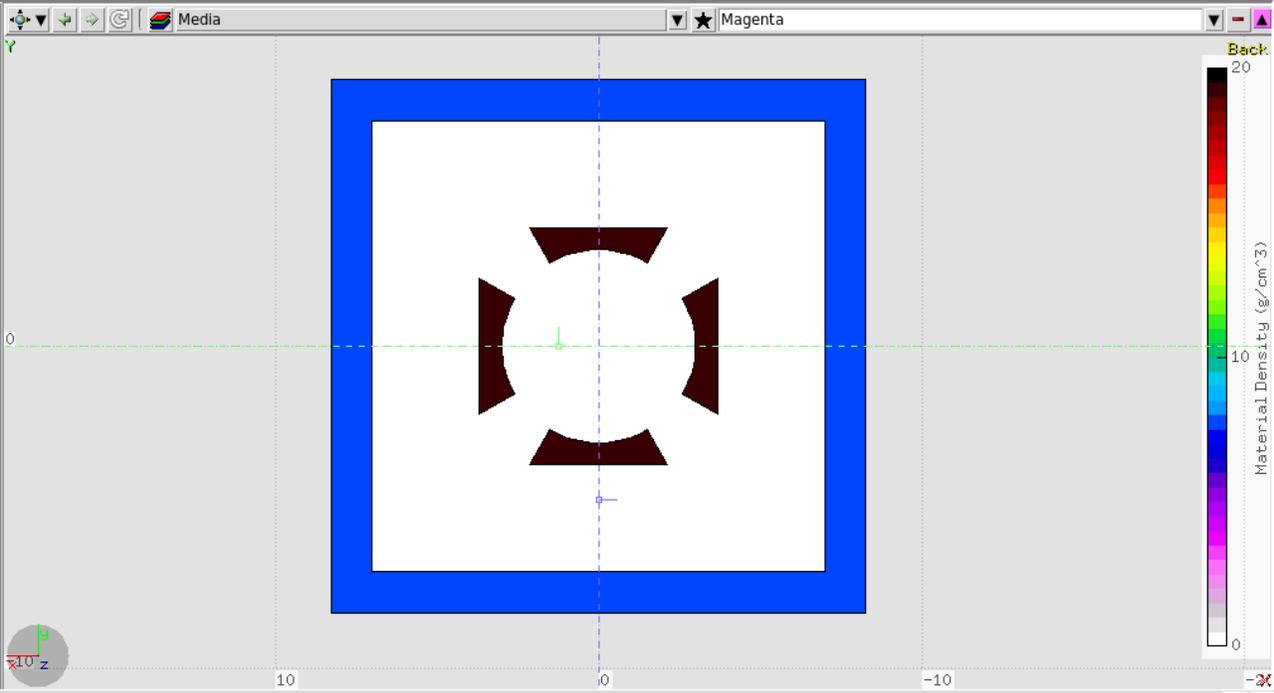
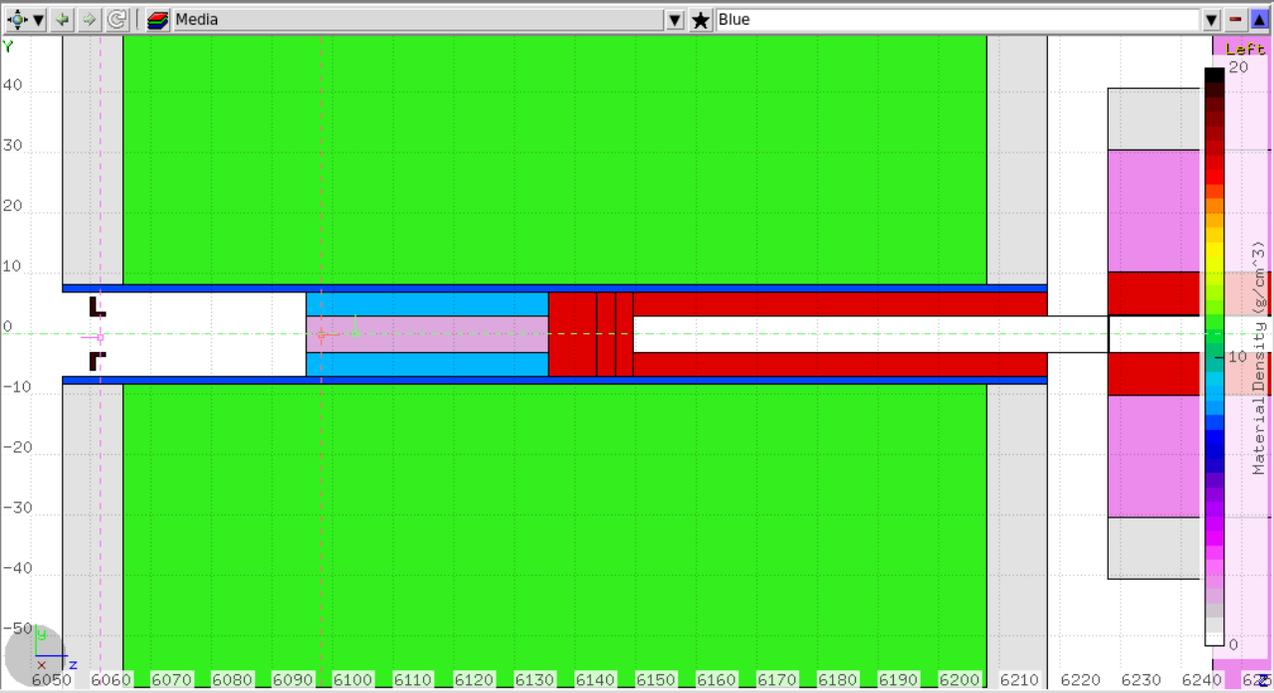
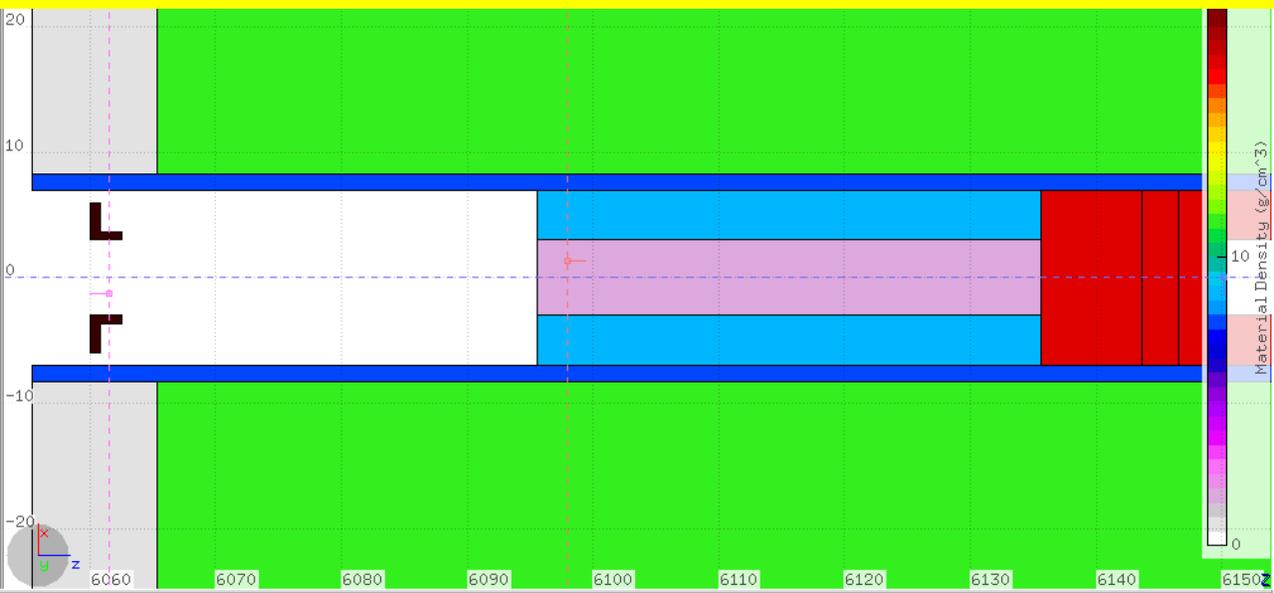
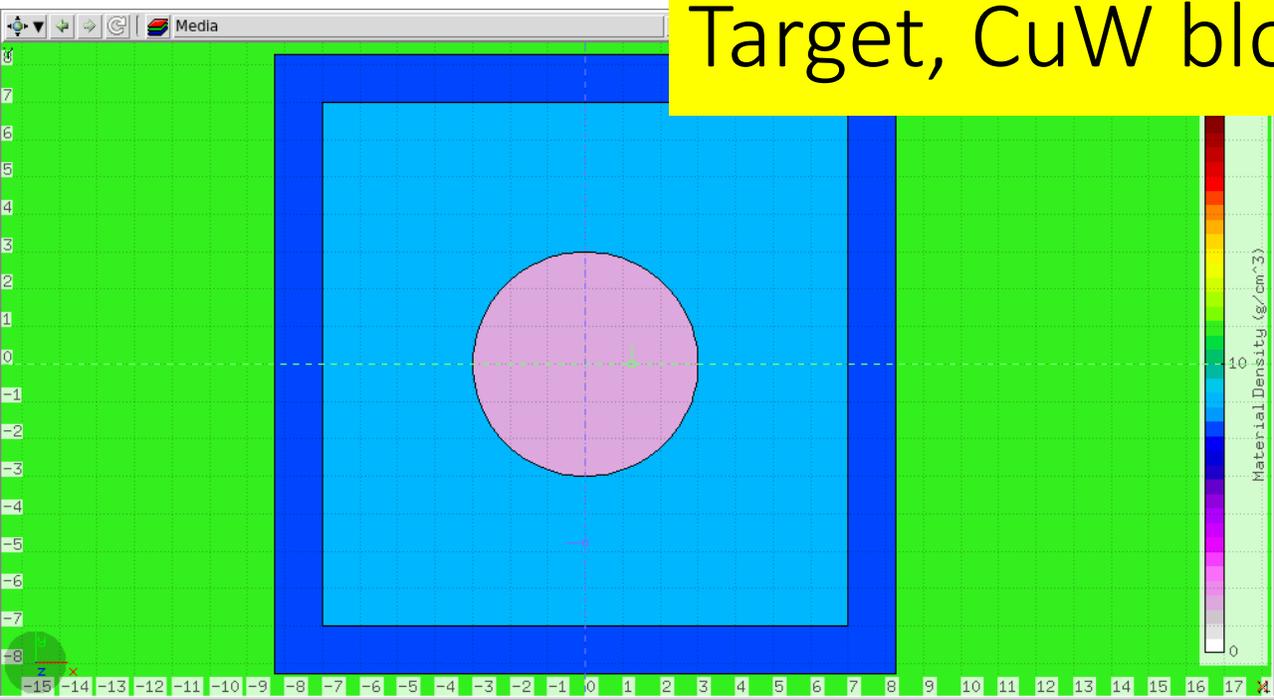
## December 19, 2024

P. Degtiarenko

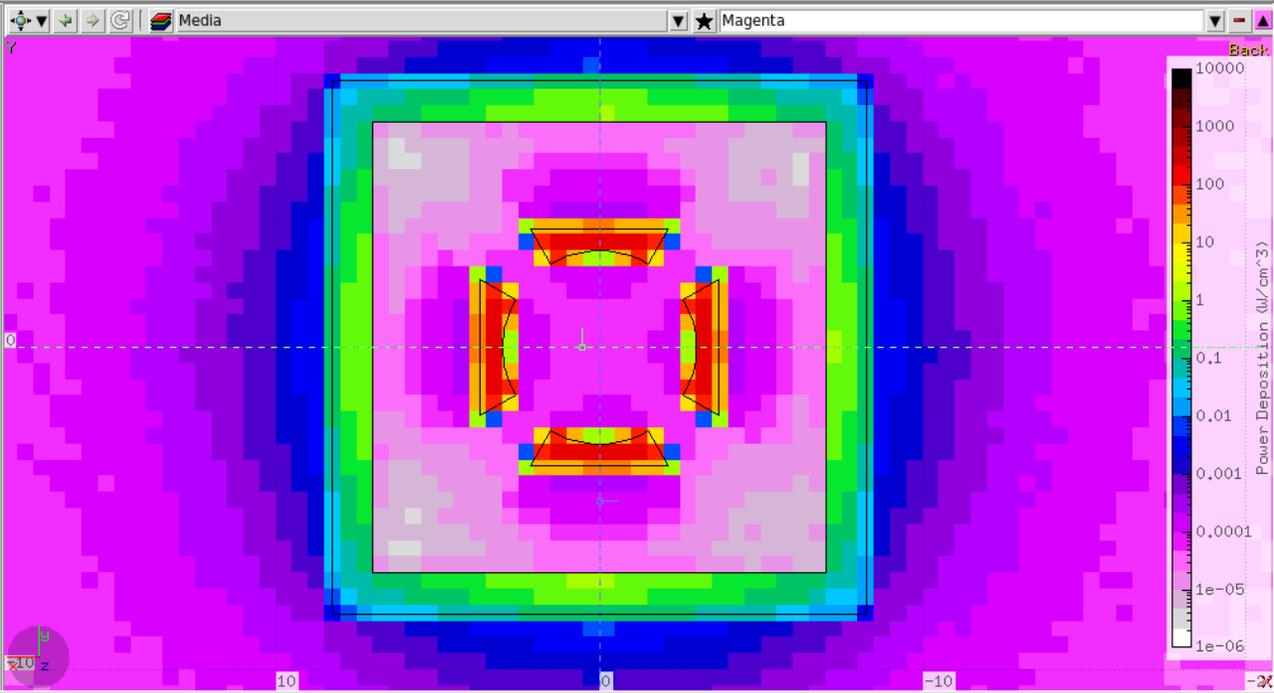
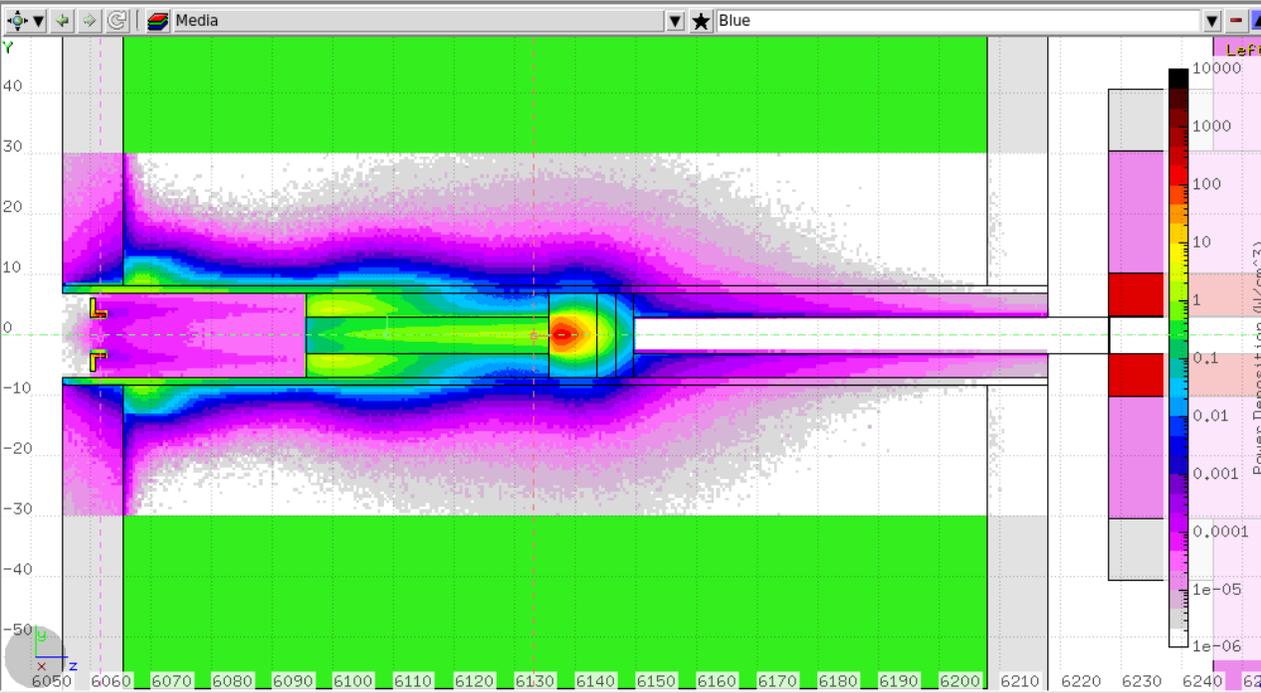
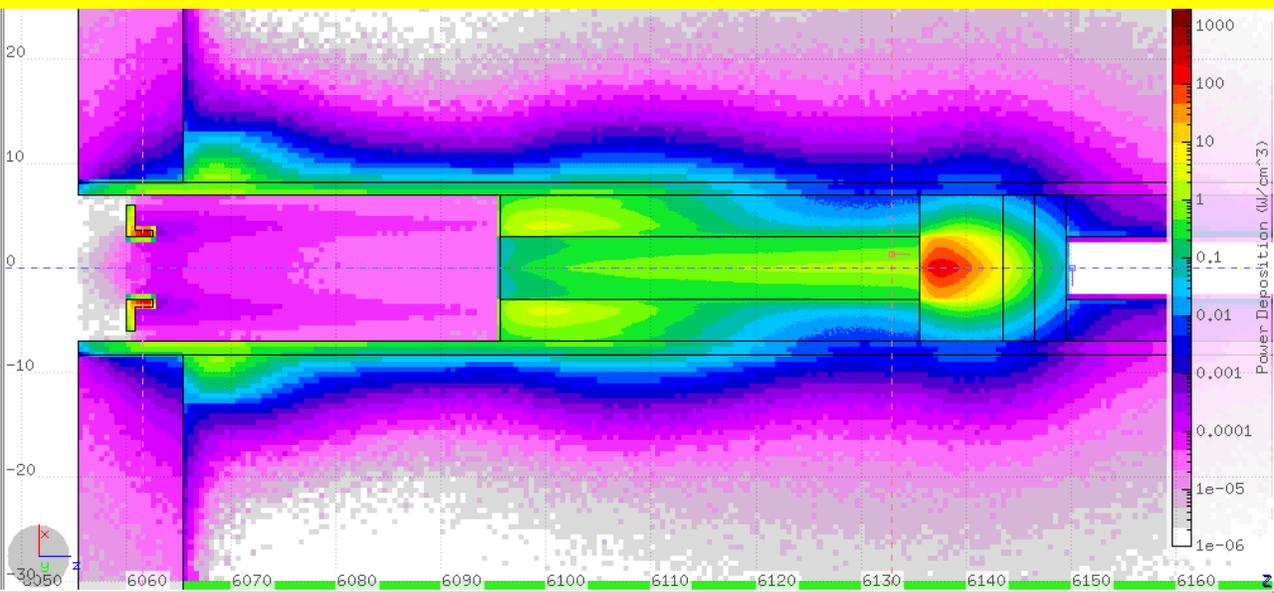
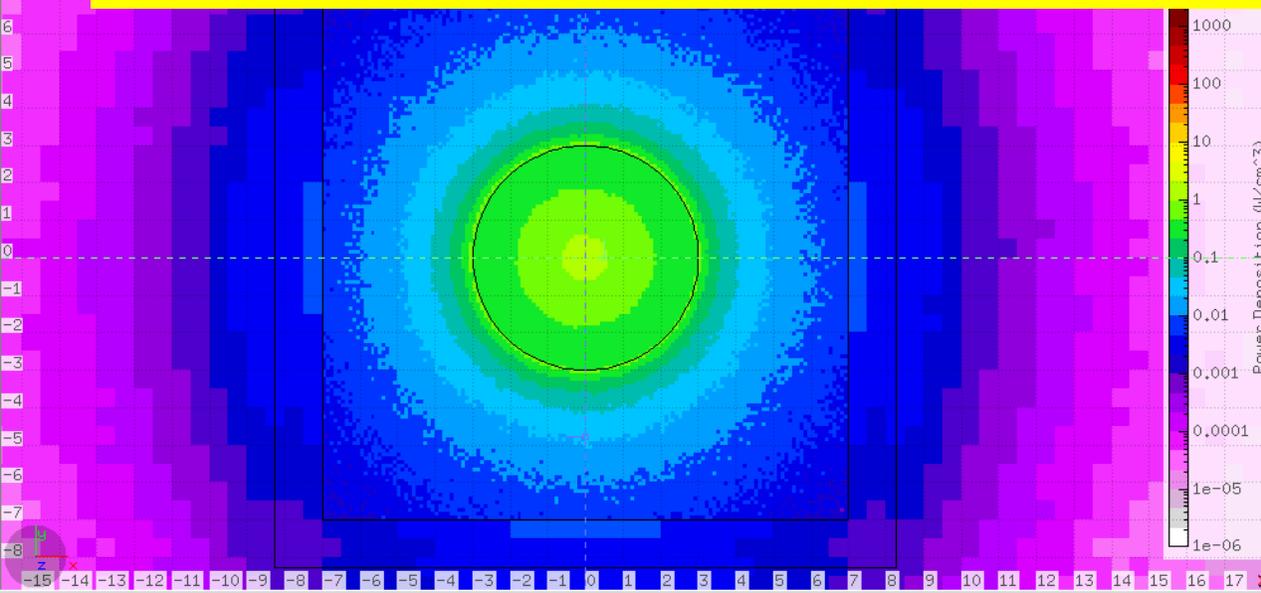
# KLF Model Update – December 19<sup>th</sup>, 2024

- Implemented the Active Collimator and evaluated the heat loads and radiation damages to materials
- Adjusted the latest FLUKA for runs using JLab Computing Farm. Relatively straightforward, anyone can try, scripts available. Achieving one or two orders of magnitude better statistics than using a “normal” or “super” RadCon workstations. If more people use it, we could run more jobs.
- At Hovanes’ request I ran one of the latest models with high statistics to evaluate the rates of different particles at GlueX, with the magnetic field crudely modeled.
- Confirmed earlier lower-statistics observations that multi-GeV muons produce the largest contribution to the dose rates (and likely to the count rates) at GLueX.

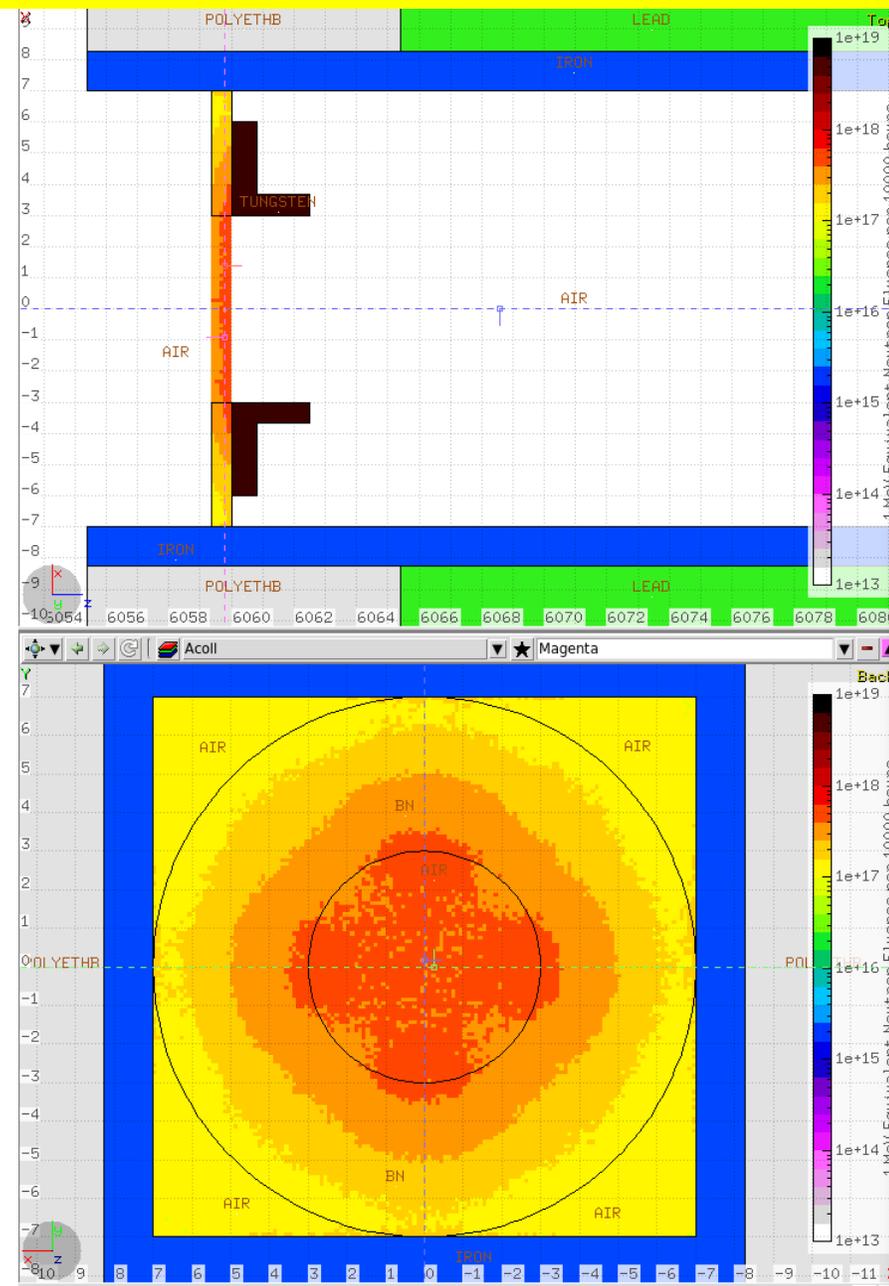
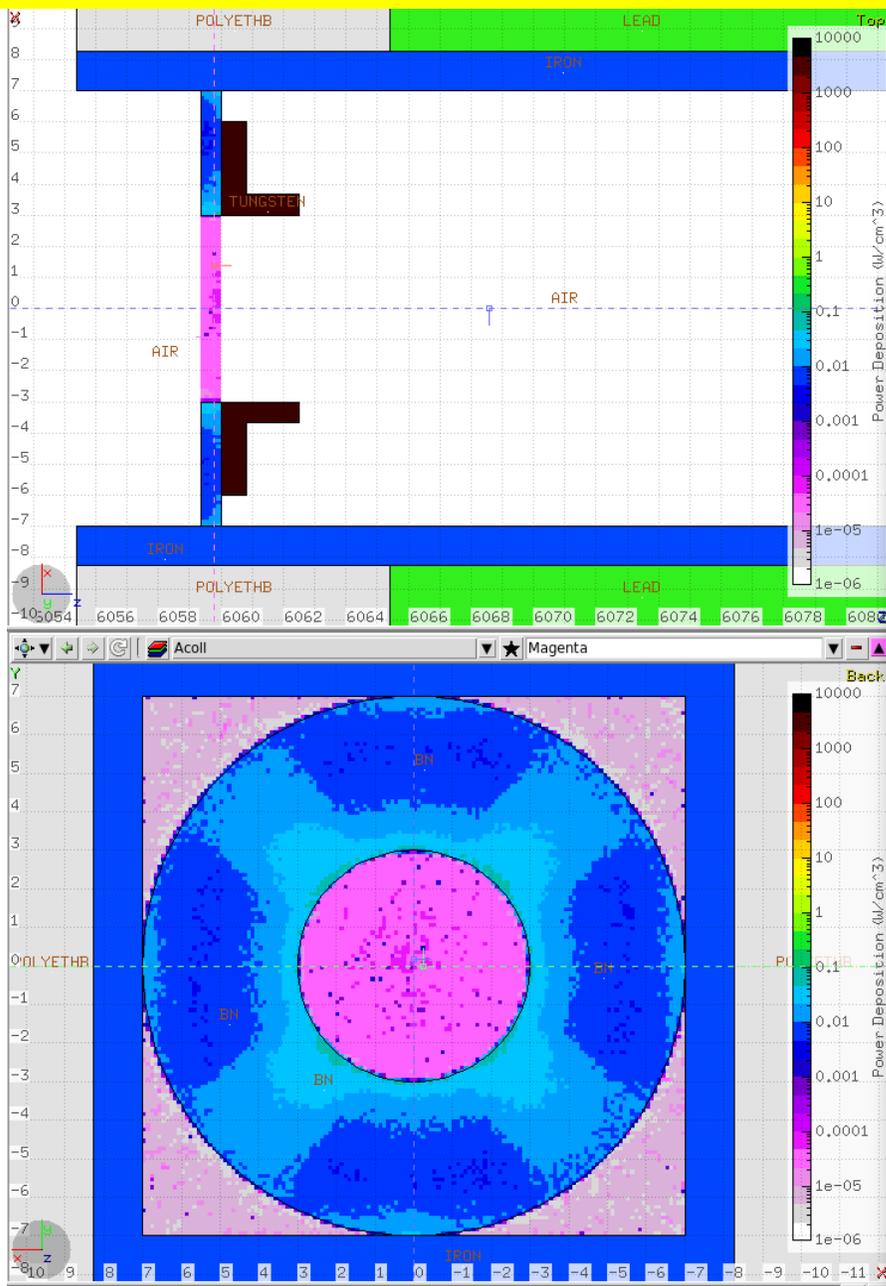
# Target, CuW block, Shielding, Act.Coll Assembly



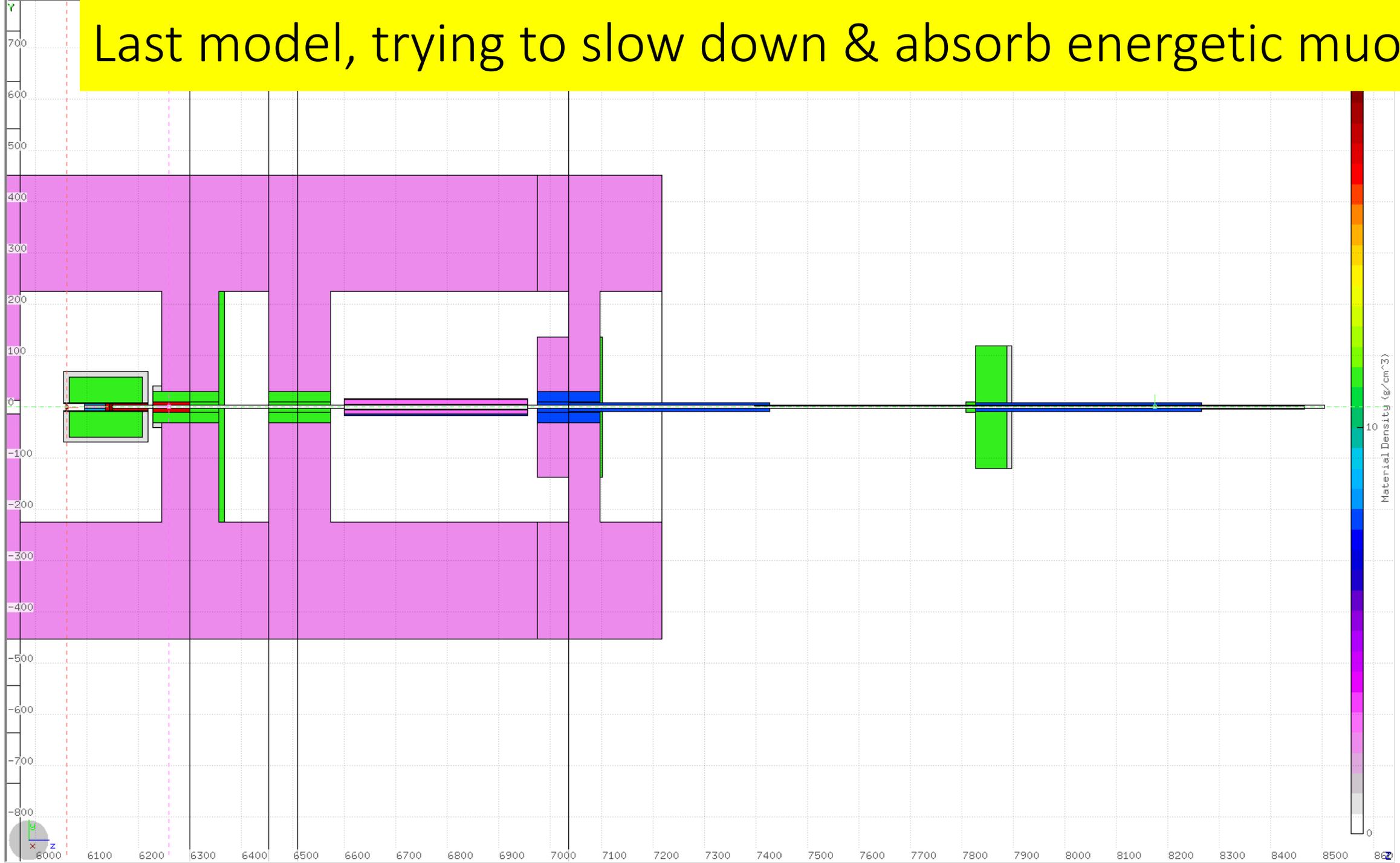
# Target, CuW block, Shielding, Act.Coll Power Density, 20% Rad.



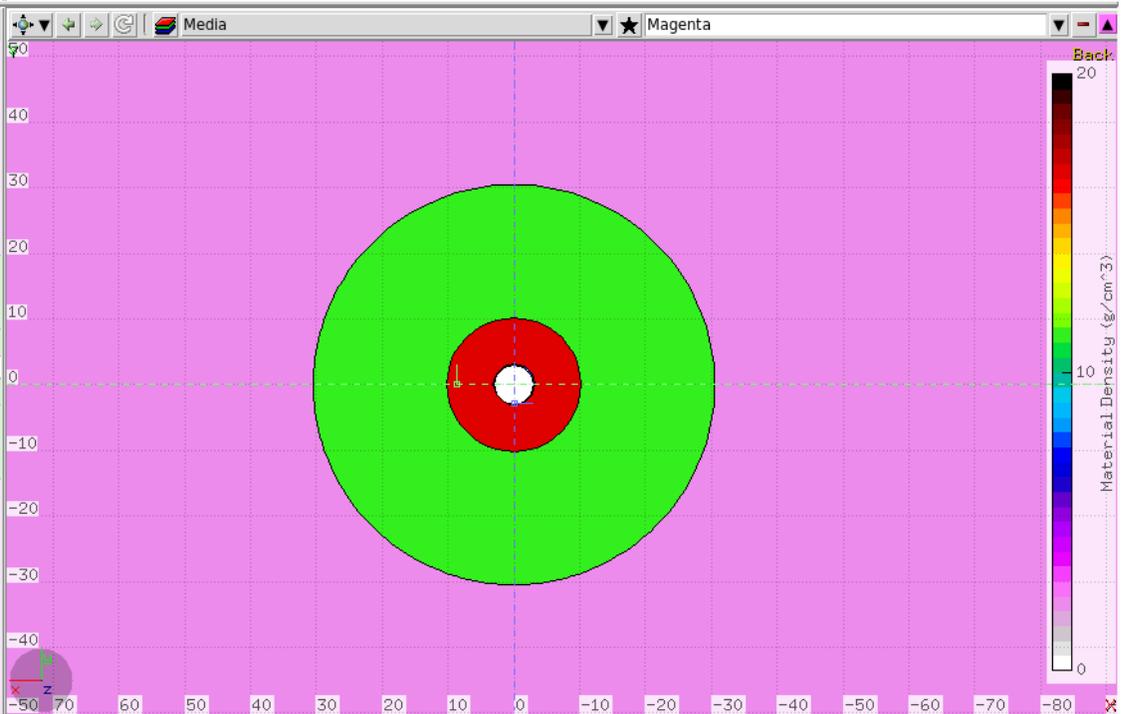
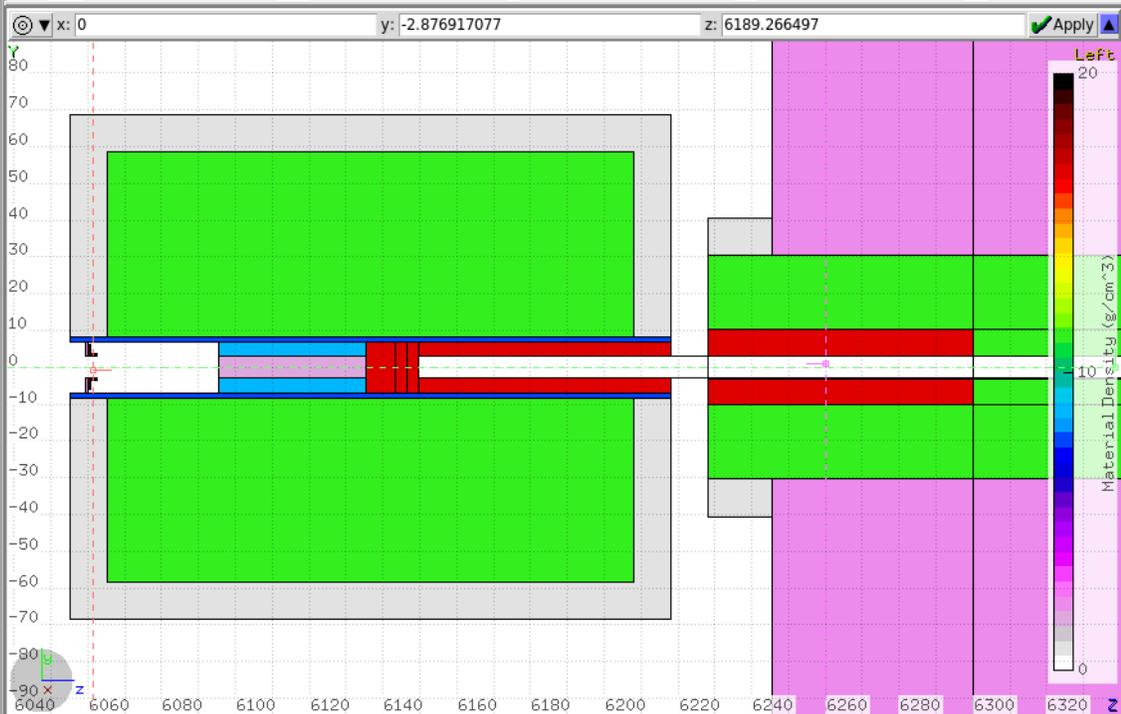
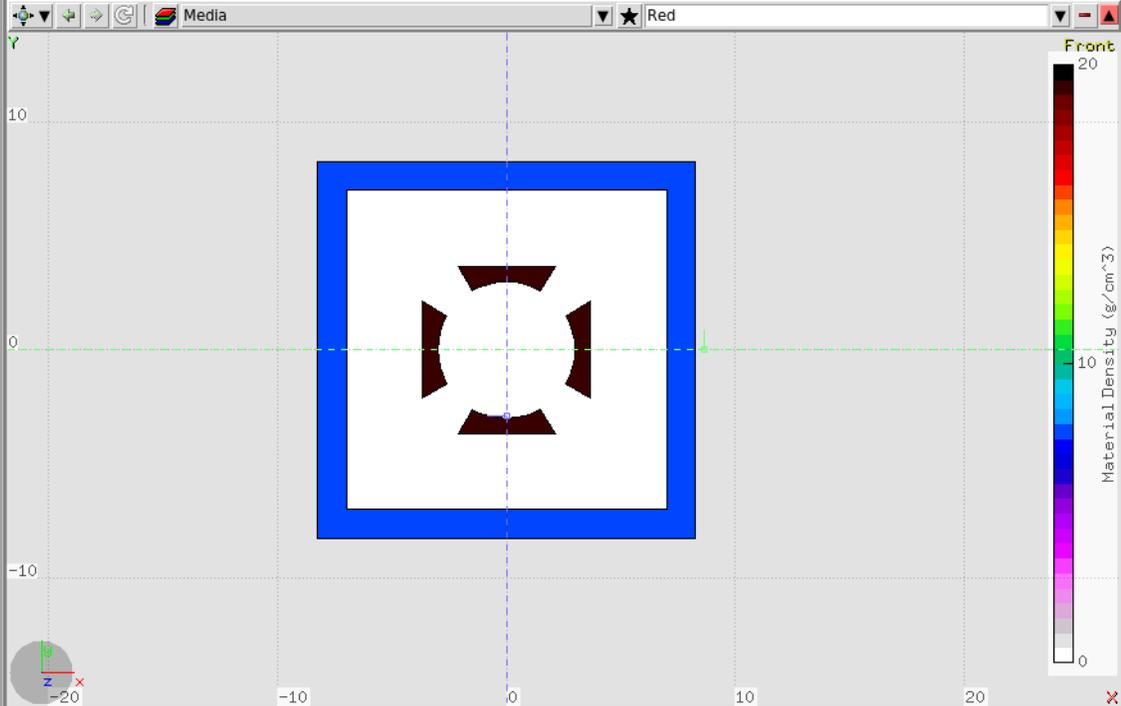
# BN plate Act.Coll Support Power Density and 1 MeV-Eq neutron fluence



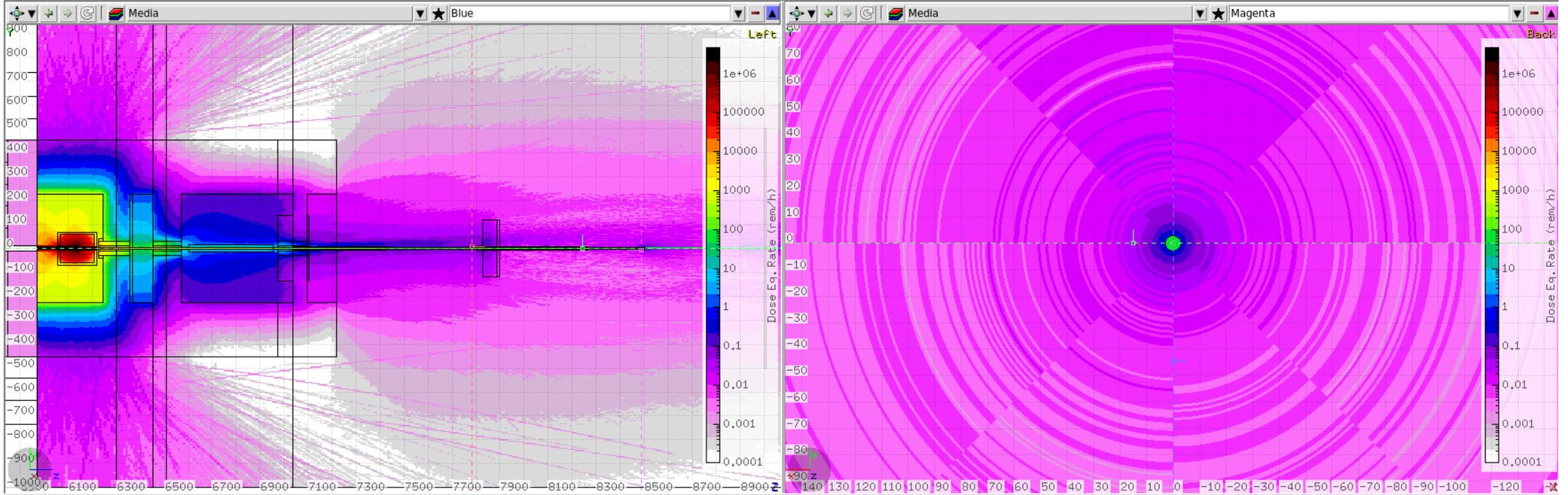
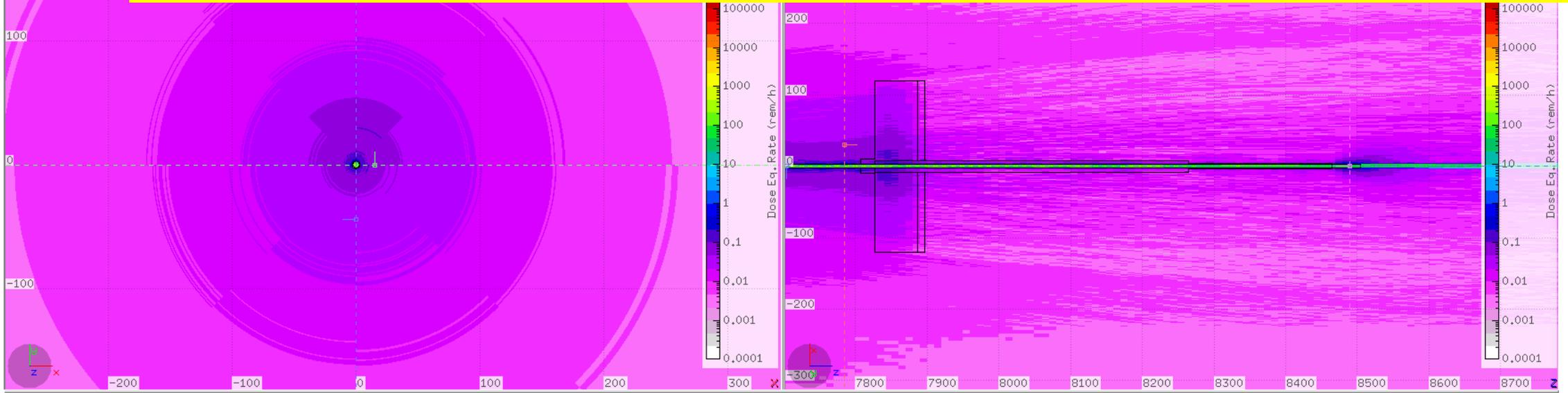
# Last model, trying to slow down & absorb energetic muons



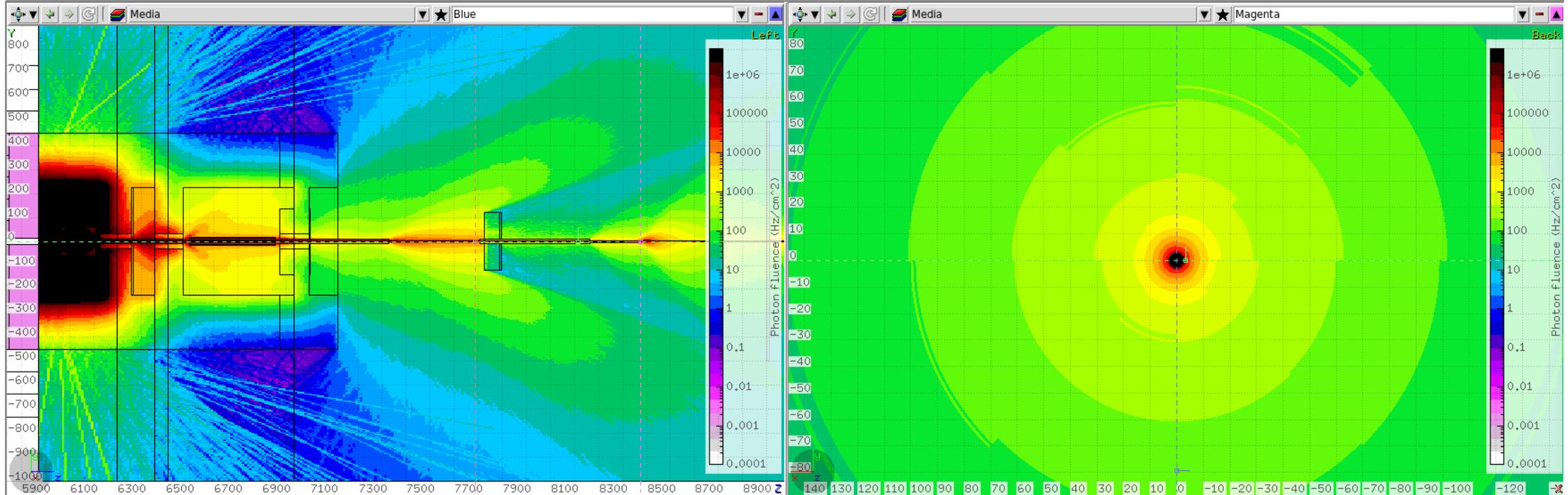
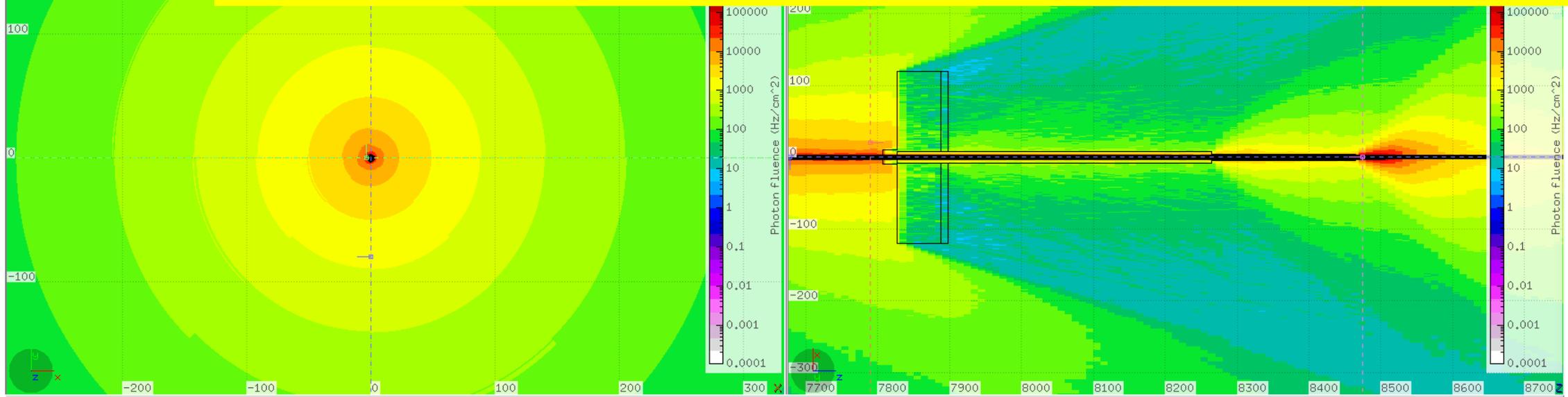
# Last model Details



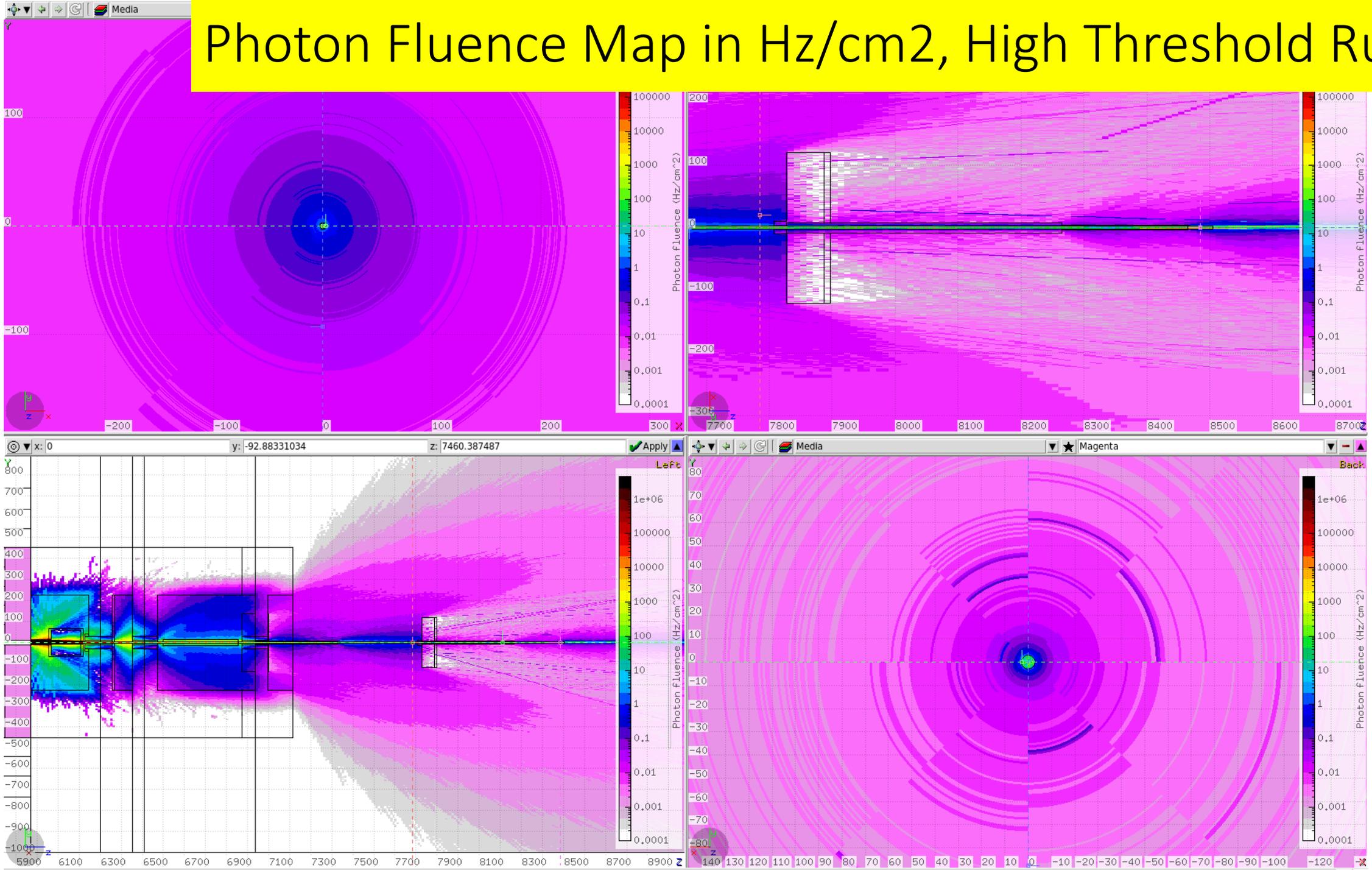
# Total Dose Equivalent Rates around Hall D, 20% Radiator



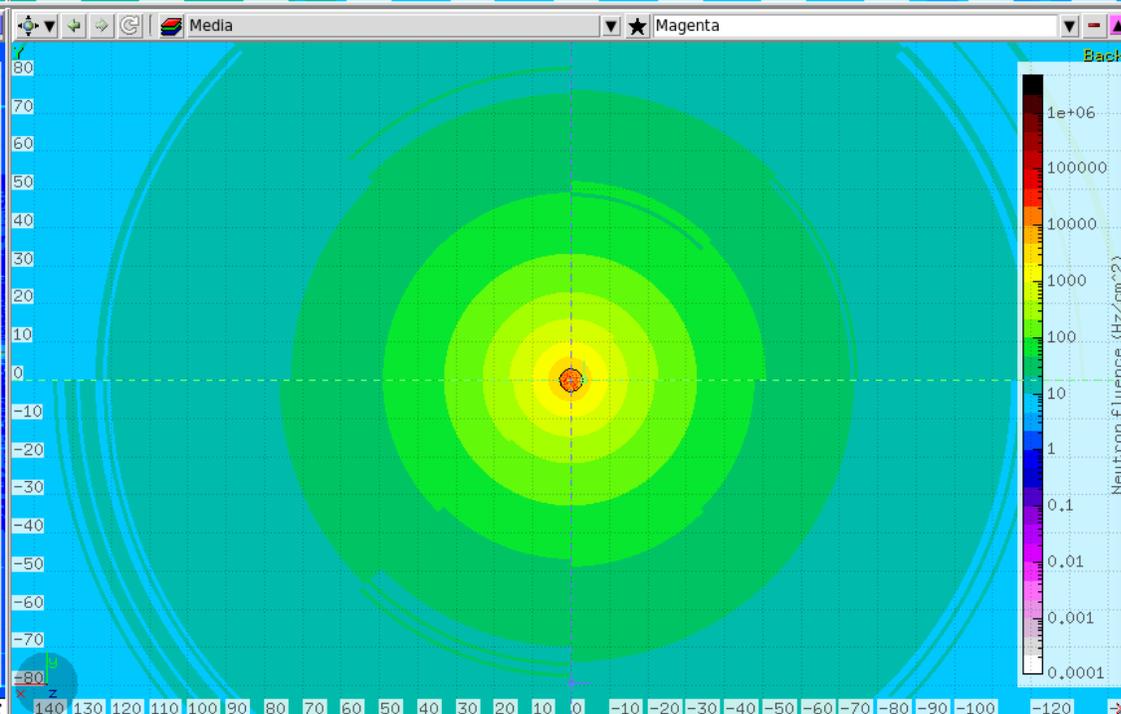
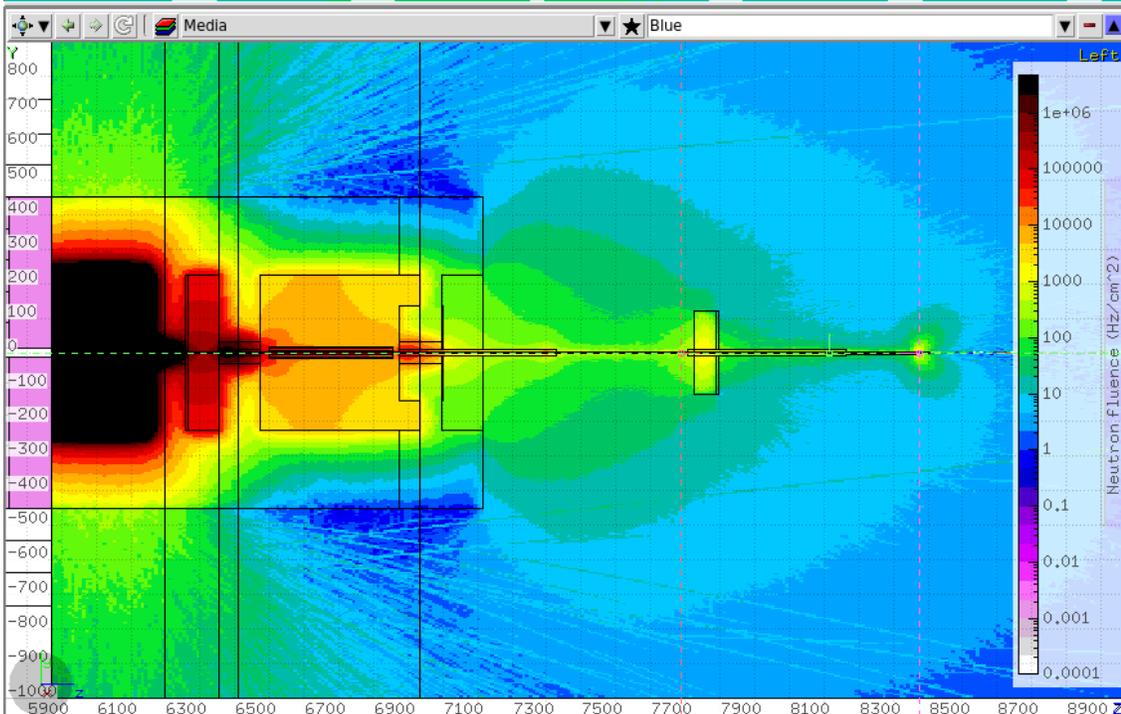
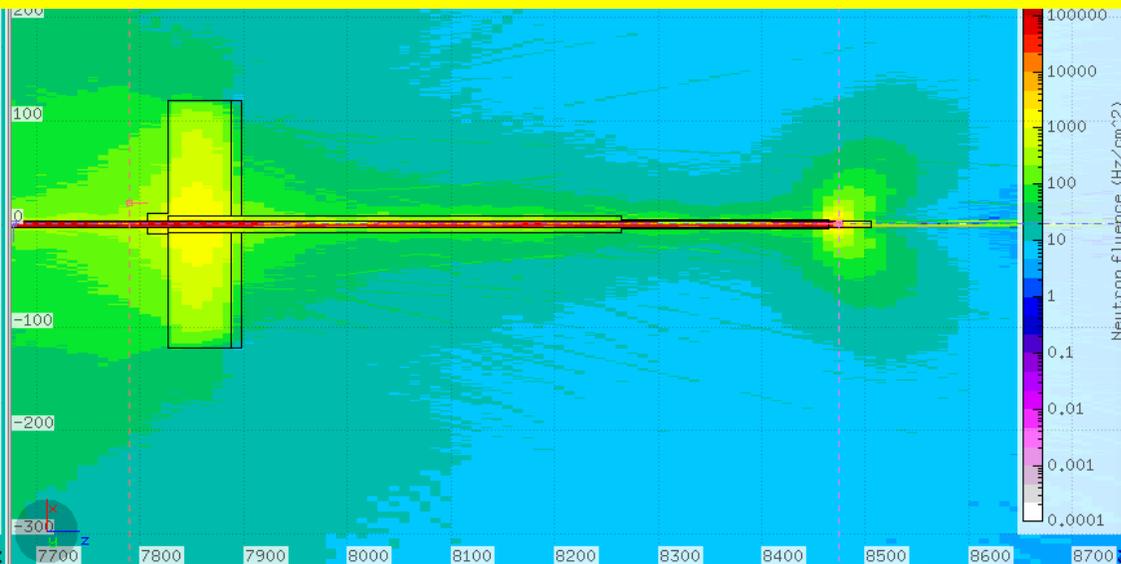
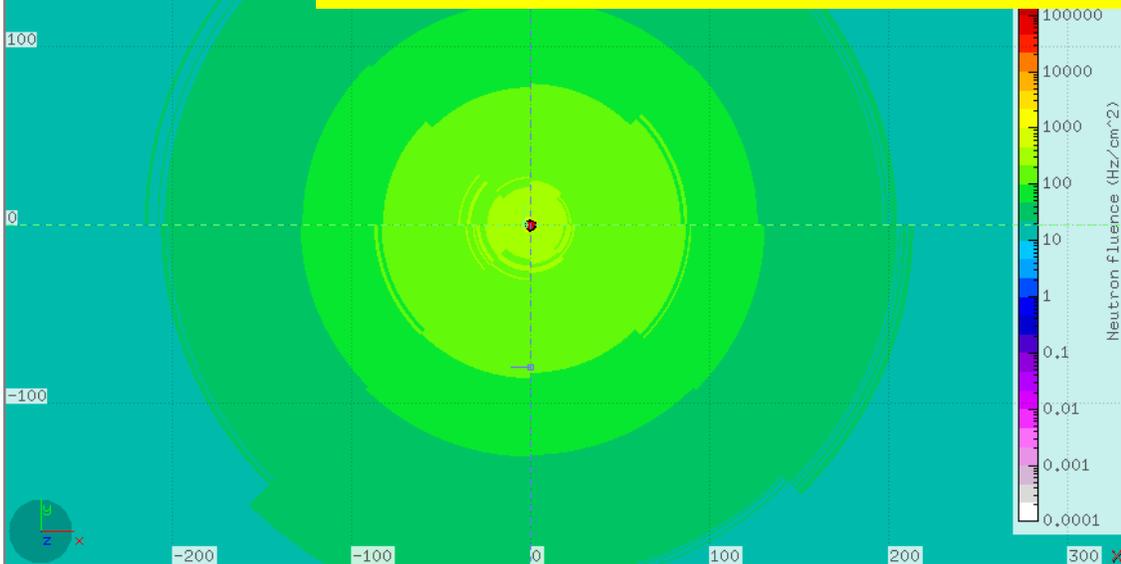
# Photon Fluence Map in Hz/cm<sup>2</sup>, Low Threshold Run



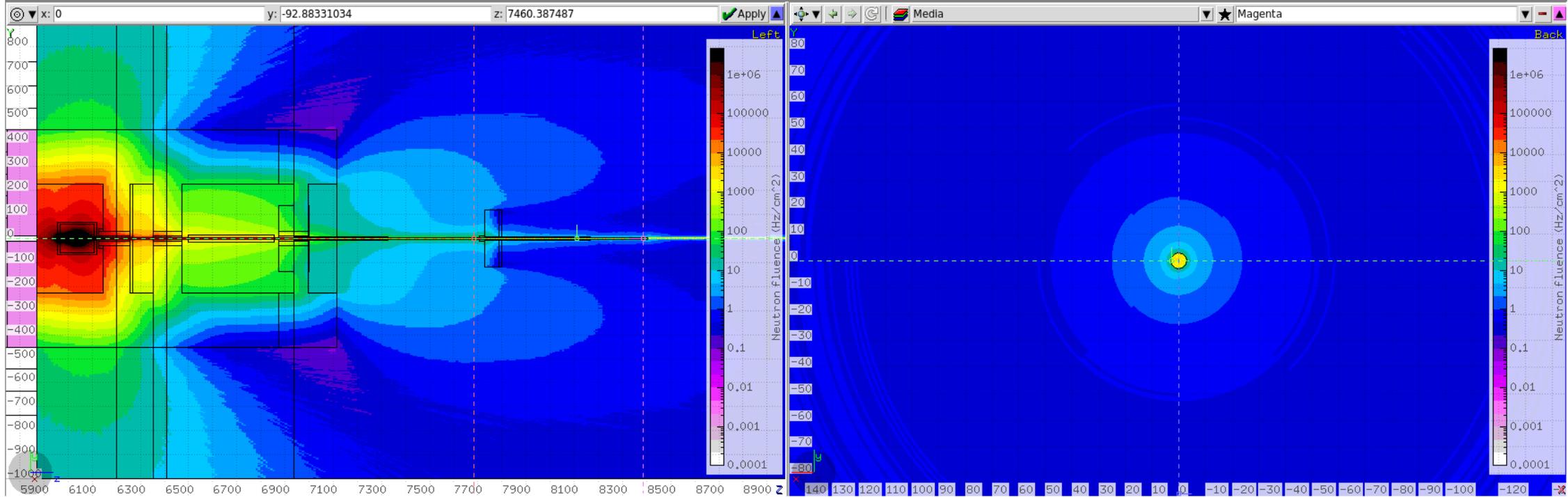
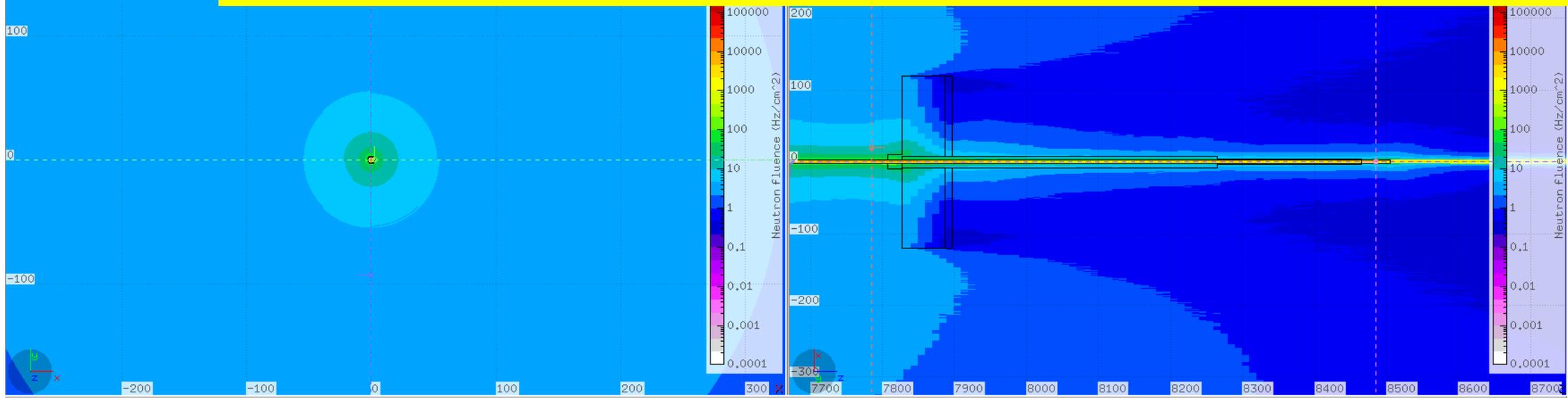
# Photon Fluence Map in Hz/cm<sup>2</sup>, High Threshold Run



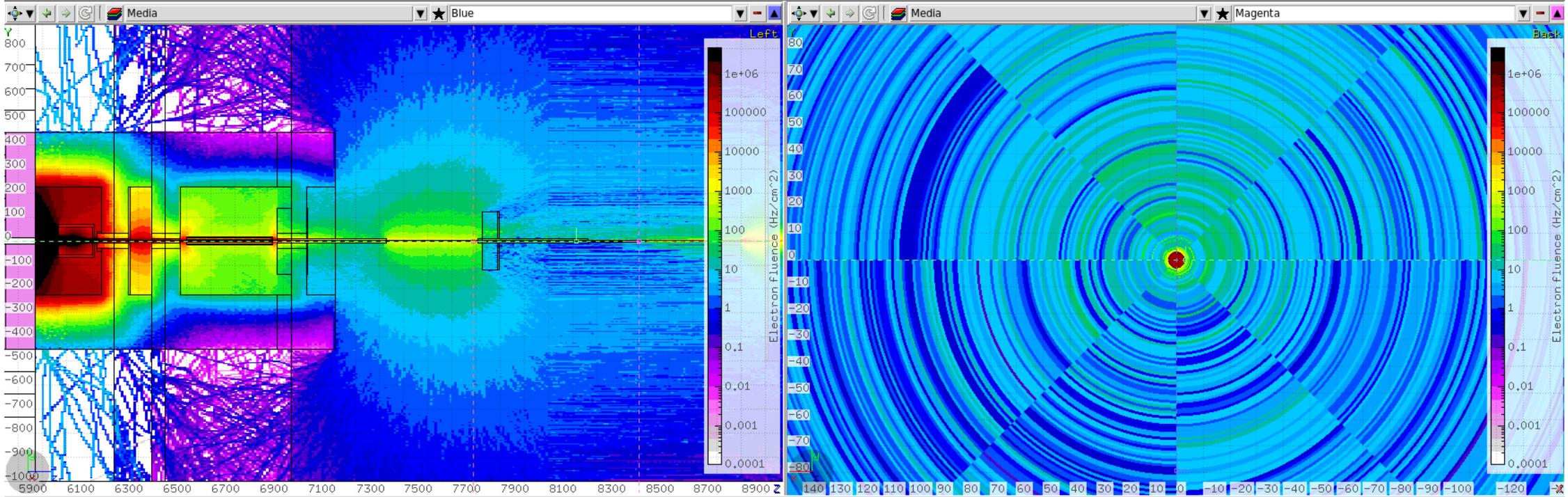
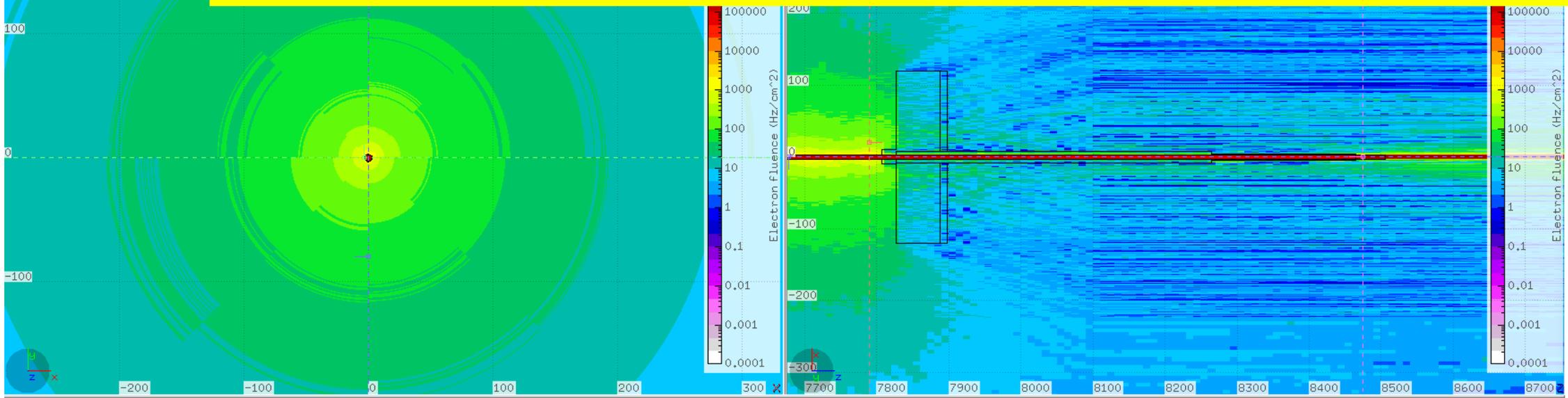
# Neutron Fluence Map in Hz/cm<sup>2</sup>, Low Threshold Run



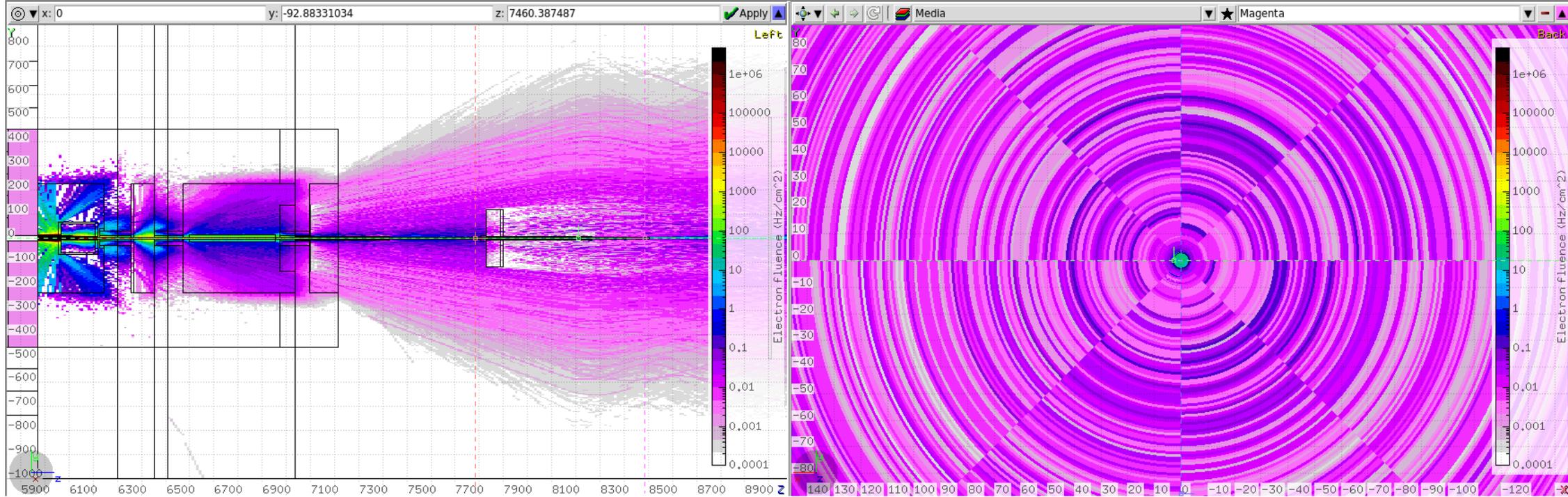
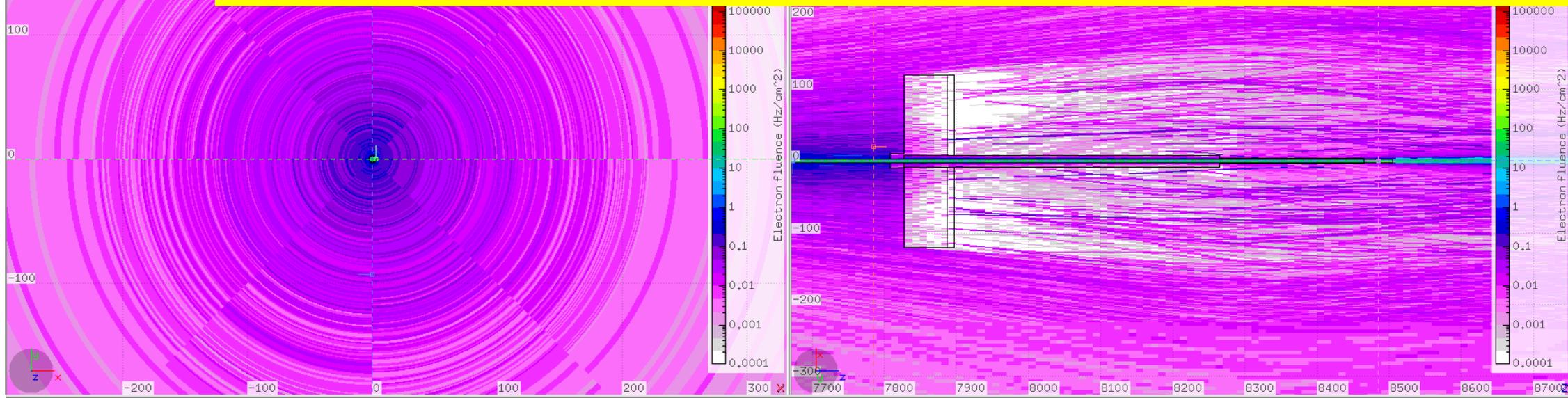
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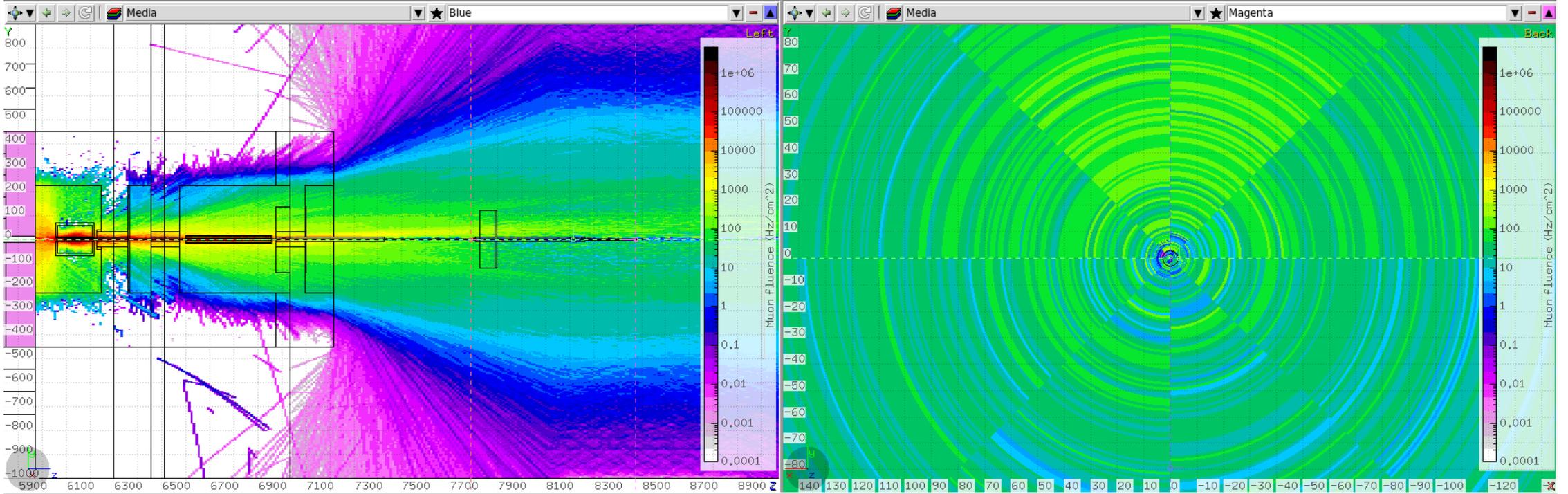
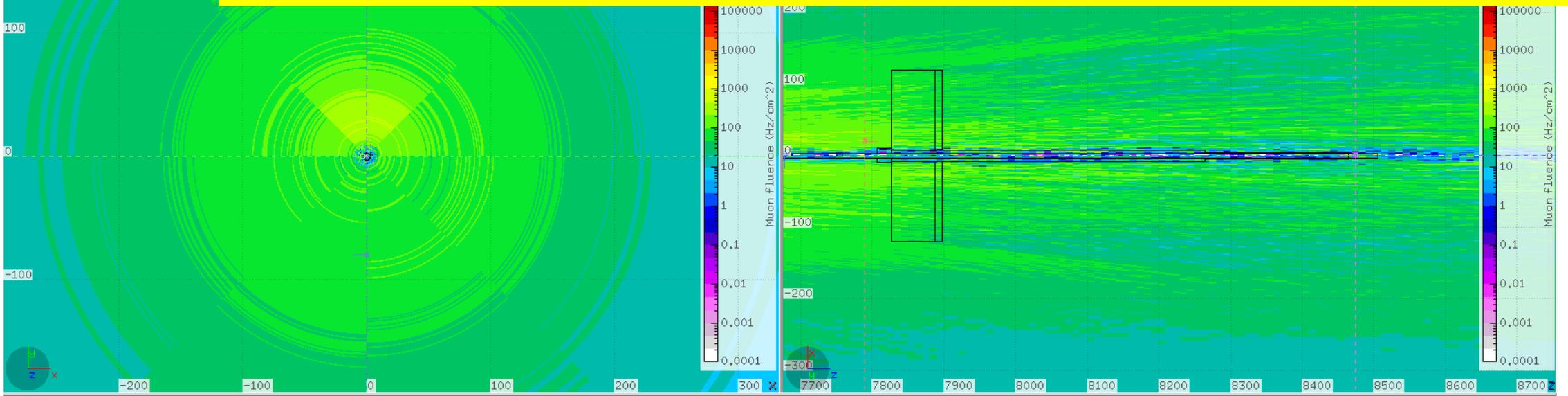
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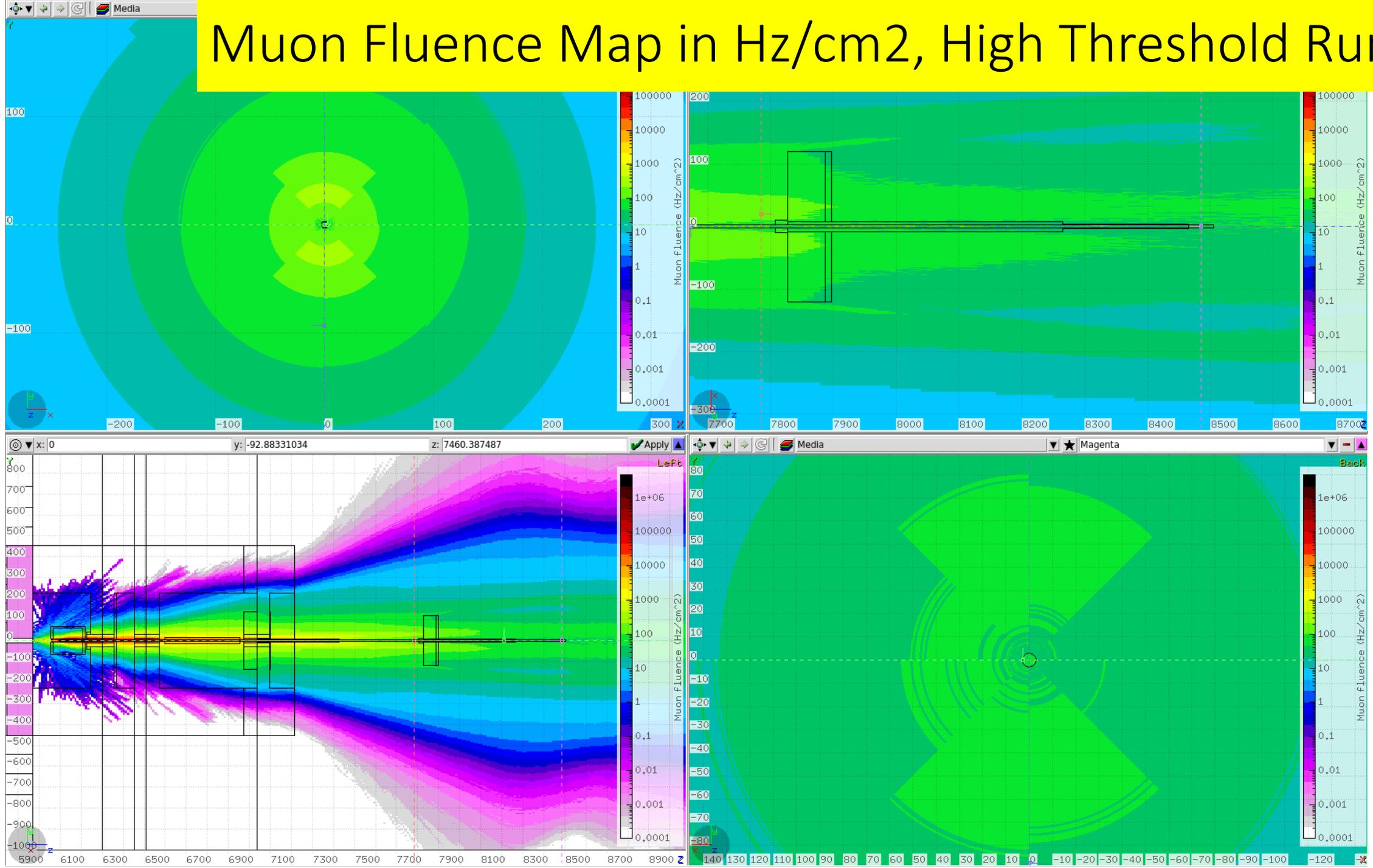
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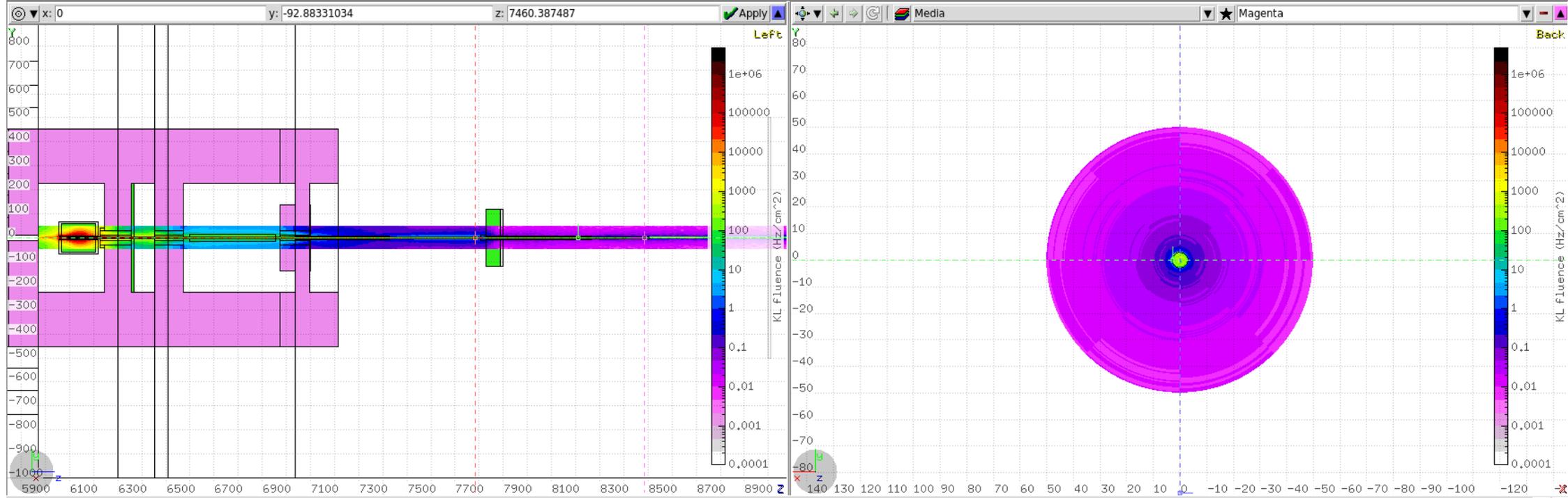
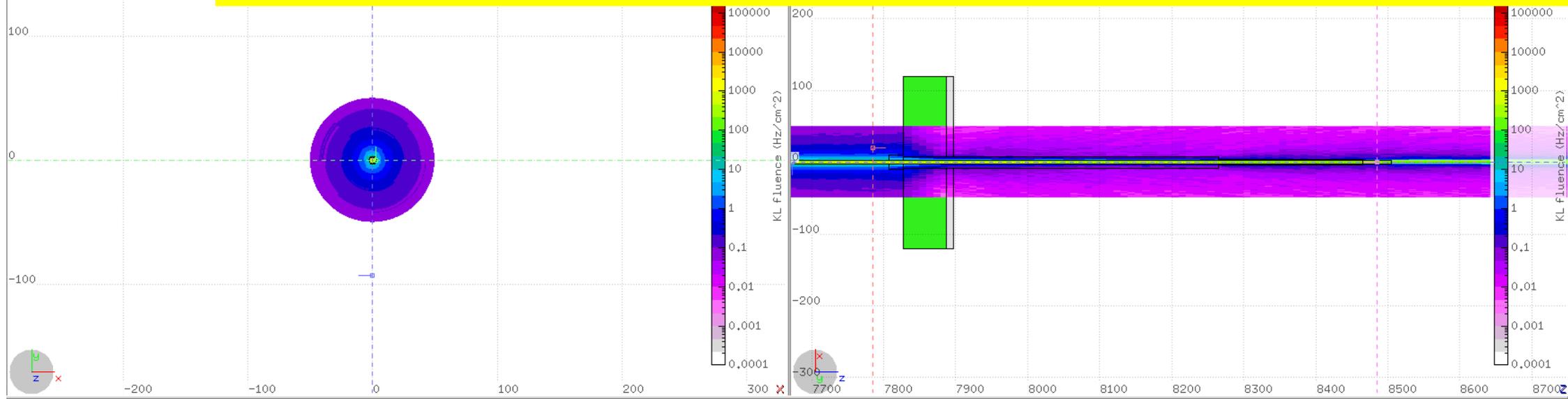
# Muon Fluence Map in Hz/cm<sup>2</sup>, Low Threshold Run



# Muon Fluence Map in Hz/cm<sup>2</sup>, High Threshold Run

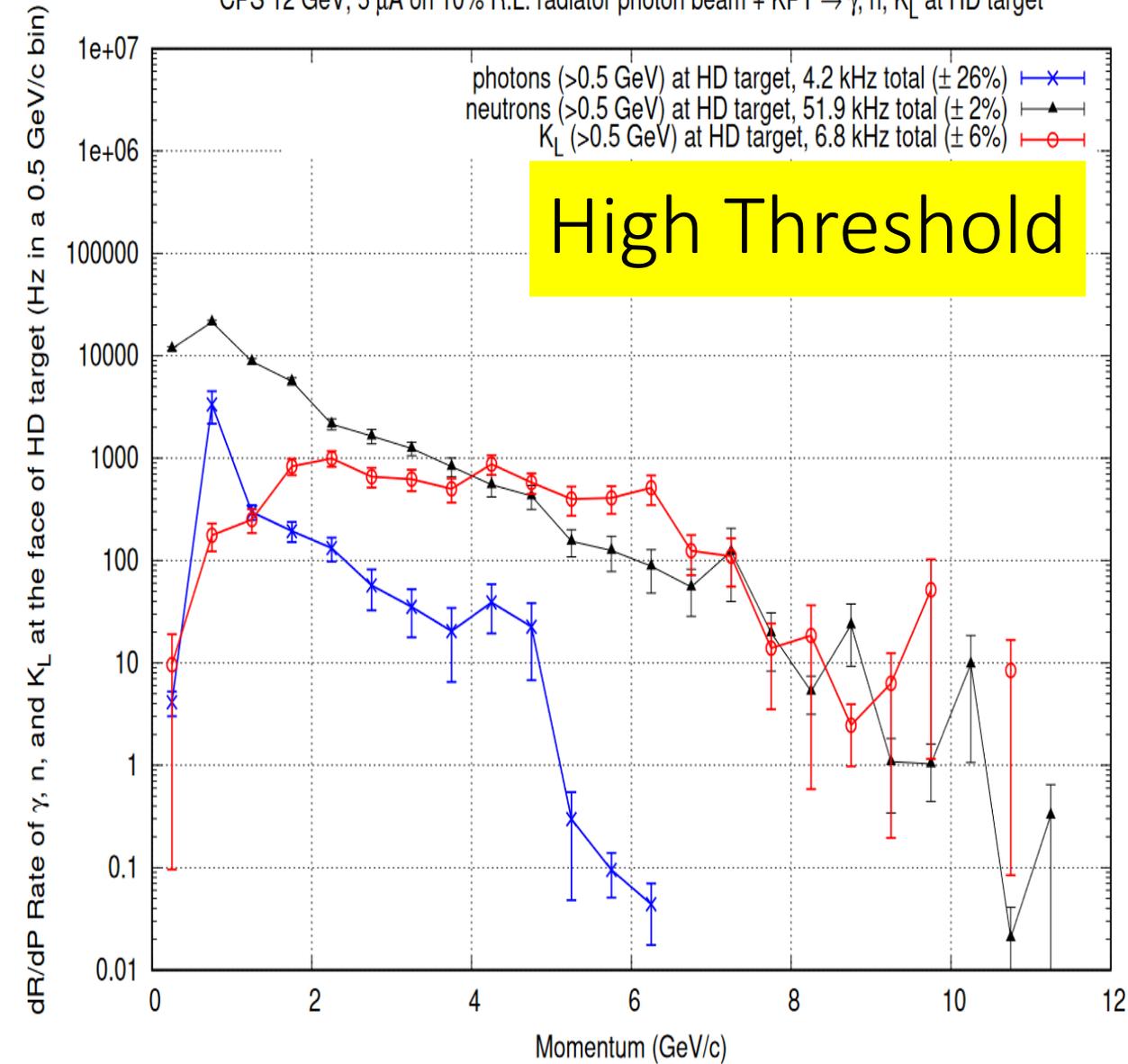


# $K_{Long}$ Fluence Map in Hz/cm<sup>2</sup>, High Threshold Run



# Momentum Spectra of photons, neutrons and $K_L$ on Target

CPS 12 GeV, 5  $\mu$ A on 10% R.L. radiator photon beam + KPT  $\rightarrow$   $\gamma$ , n,  $K_L$  at HD target



CPS 12 GeV, 5  $\mu$ A on 10% R.L. radiator photon beam + KPT  $\rightarrow$   $\gamma$ , n,  $K_L$  at HD target

