## SoLID SIDIS NH3

Zhiwen/Vlad/Weizhi 2020/05/26

#### Setup

- Target field "oxford\_ptarget" main field along +x axis which is parallel to the hall floor
- A bug fixed in gemc handling transverse of cylindrical-x field. It doesn't affect main CLEO solenoid field which has cylindrical-z symmetry.
- It seems we have higher rate of low energy particles on all detectors after this field fix, but it doesn't affect high energy particles
  - Old simulation data pass3 has this field bug
  - New pass4 and pass5 beyond has this bug fixed



# Shielding near target

- Shielding near target could be a simpler and better solution comparing shield/switch-off for all detectors. We are doing similar things for SIDIS\_He3 and PVDIS anyway
- Target center at z=-350cm and exit window at z=-325cm
- Look at how shee of flame look at z=-320cm and z=-300cm
- Choose z=-320 to build two trapezoid shape collimators of TungstenPowder
  - TungstenPowder density 60% of Tungsten, X0=0.6cm
  - Rin=1.5cm, Rout=16.5cm
  - top width=4cm, radiation length 7X0, phi coverage 7.5 deg
  - bottom width 9.4cm, radiation length 16X0, phi coverage 21 deg



### Pass3 without shielding



#### Pass4 without shielding



### Pass5 with shielding



### Pass3 without shielding



### Pass4 without shielding



#### Pass5 with shielding



# eDIS rate

Q2>0/Q2>1 (kHz)	Pass3	Pass4	Pass5	Pass5 large	Pass5 small
FA	45/15		9.2/6.7	4.3/3.4	35/14
LA	16/2.9		3.8/2.3	0.84/0.78	40/2.9

Rate is shown for with no Q2 cut and with Q2>1 cut

Only eDIS particle rate is shown, no secondary particles. But some of them could have been deflected on shielding and not good for physics.

large is to double the shielding size in all X and Z

Small is to shrink half the shielding size in all X and Z