Tilted vs Non-Tilted Holes

Vassu Doomra

We will study 3 different cases:

- Holes with 9 or 6 mm diameter without tilt.
- Holes with 5 mm diameter without tilt
- Holes will 5 mm diameter with tilt.

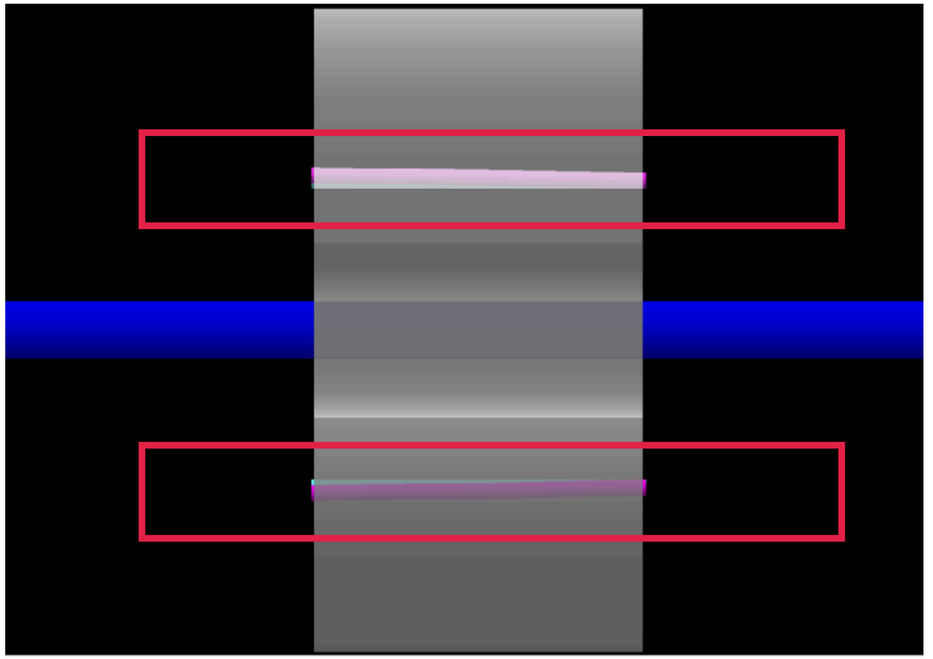
- The tilt Angle is determined with respect to the center of the LH2 target.

- All the results presented in this presentation are produced with the optics1 DS target C foil.

- The tilt has been introduced in a way that the front/ upstream face of the tilted vs non-tilted holes lie on top of each other.

- we have put two virtual detector planes one in front of the sieve and one just behind the sieve and we are trying to determine the change in the energy of the tracks in passing through the sieve holes.

- Holes 13 and 73 are tilted with a tilt angle of around 18 mrad.



Fraction of primary electrons that loose as low as10 MeV energy in passing through the sieve

	9 mm w/o Tilt	5 mm w/o Tilt
Sector 1	1.43%	2.51%
Sector 2	0.79%	1.04%
Sector 3	1.67%	3.18%
Sector 4	1.01%	1.60%
Sector 5	1.36%	1.30%
Sector 6	1.78%	1.81%
Sector 7	2.72%	4.85%

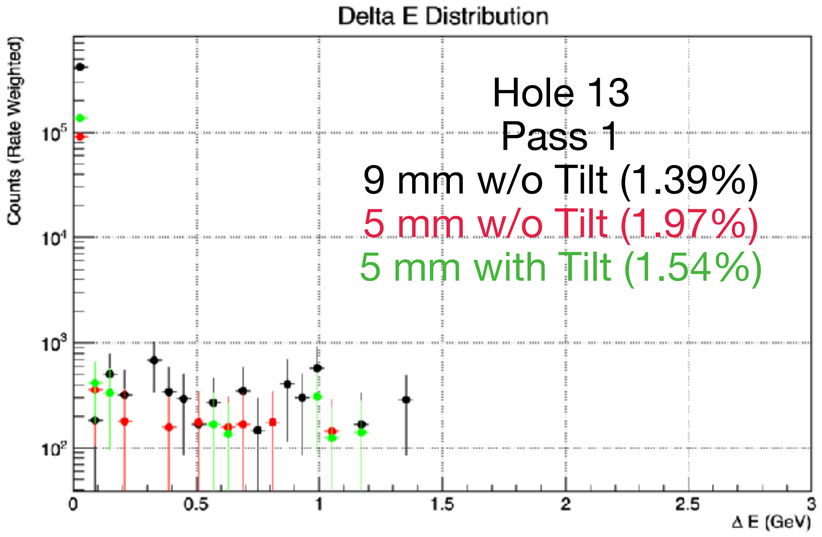
Pass 1: For this pass Hole 11, 31, 61 and 71 are not in the acceptance

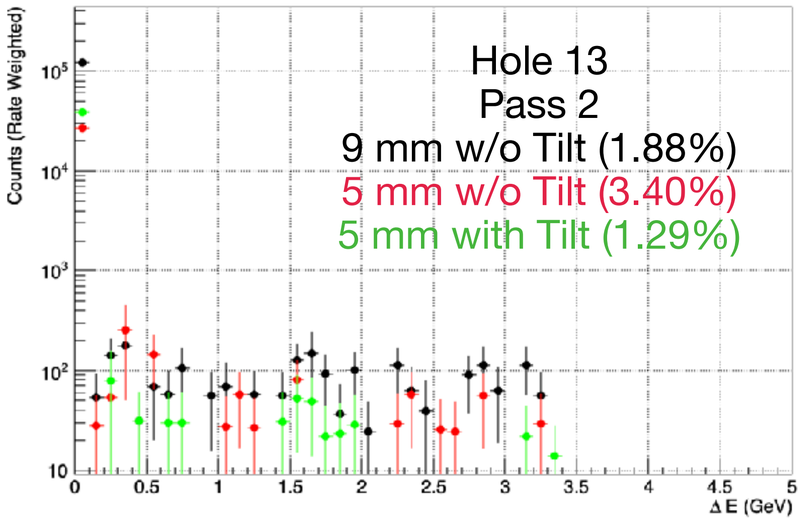
	9 mm w/o Tilt	5 mm w/o Tilt
Sector 1	0.65%	1.83%
Sector 2	1.96%	2.25%
Sector 3	1.15%	1.11%
Sector 4	1.36%	2.55%
Sector 5	2.01%	2.23%
Sector 6	0.89%	1.45%
Sector 7	1.01%	2.80%

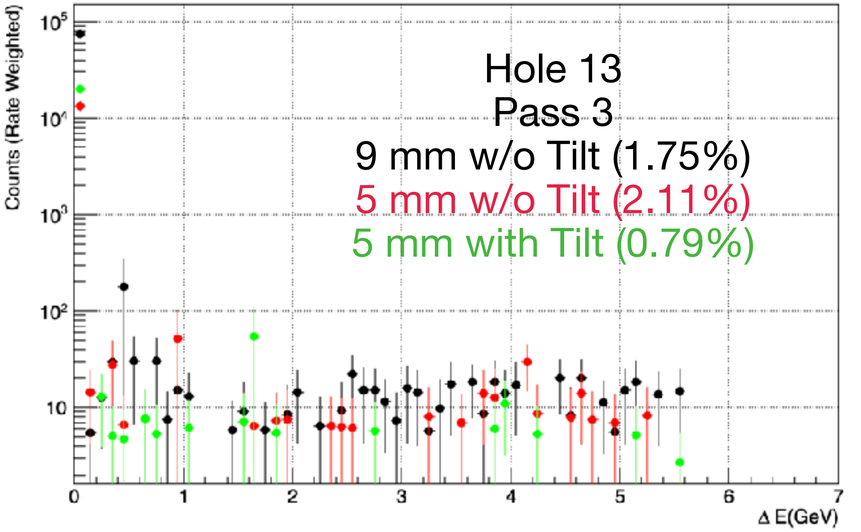
Pass 2

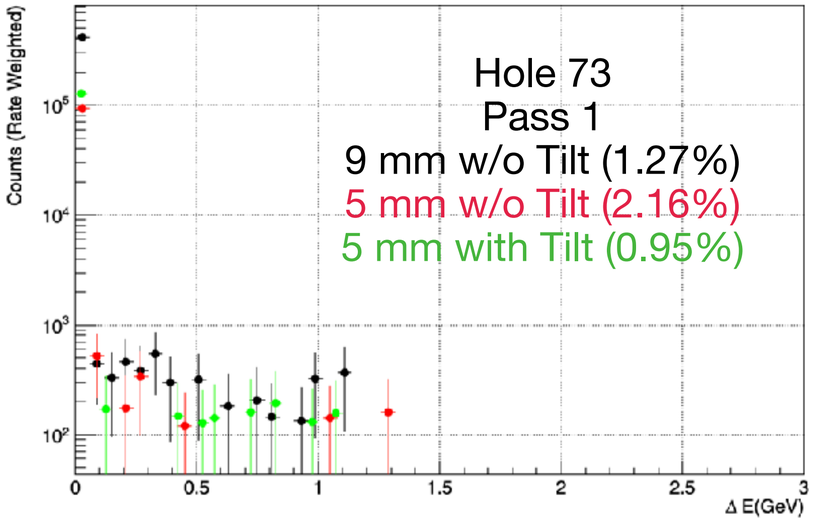
	9 mm w/o Tilt	5 mm w/o Tilt
Sector 1	0.95%	1.46%
Sector 2	1.31%	2.45%
Sector 3	1.06%	2.69%
Sector 4	1.56%	2.33%
Sector 5	2.43%	1.71%
Sector 6	1.00%	4.03%
Sector 7	1.27%	2.34%

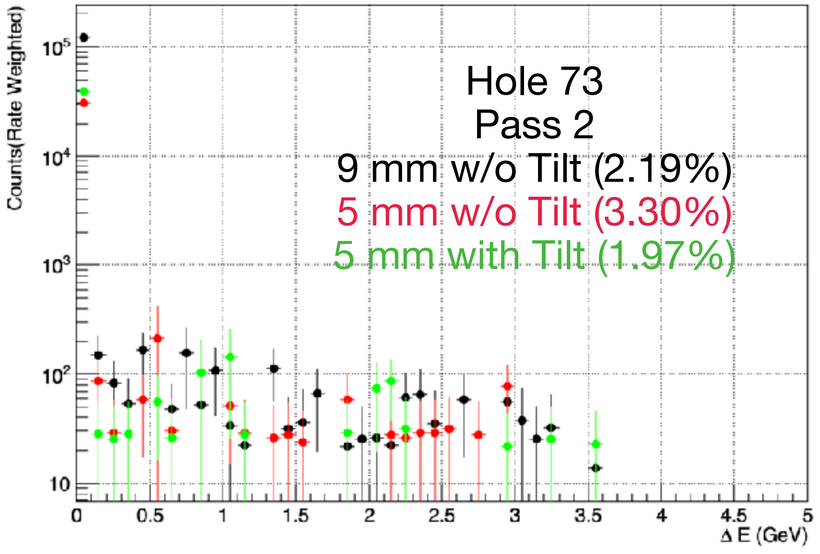
Pass 3

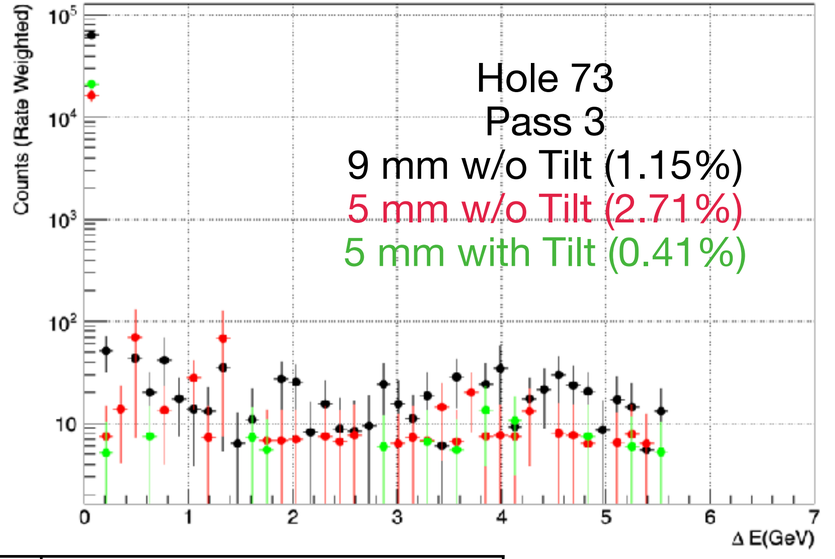




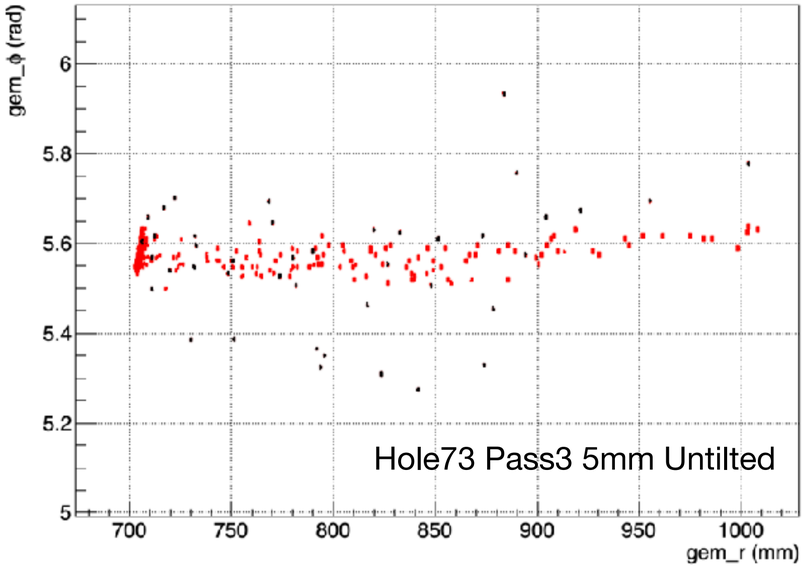


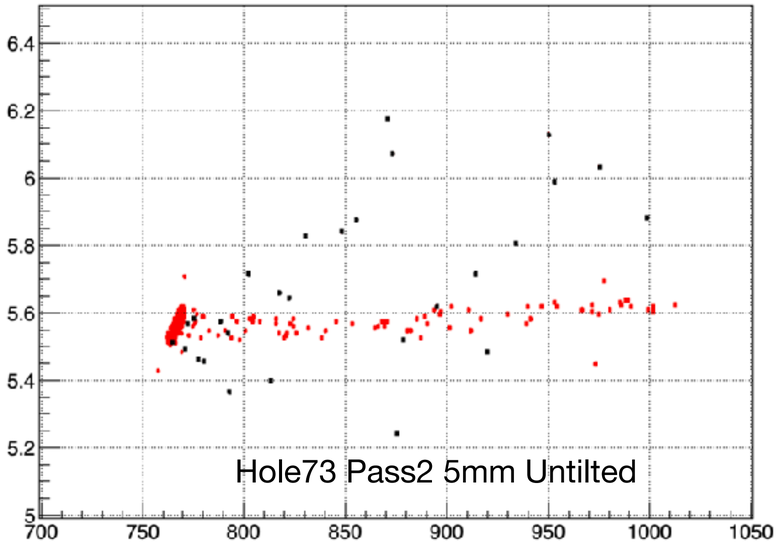


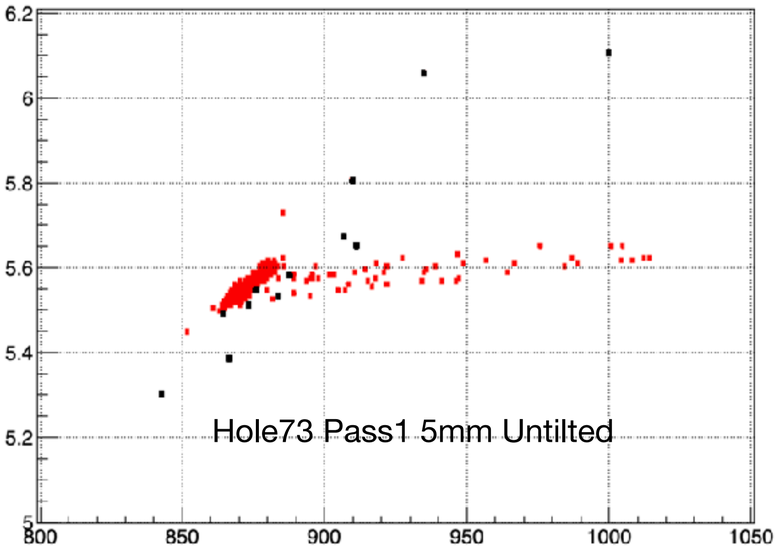


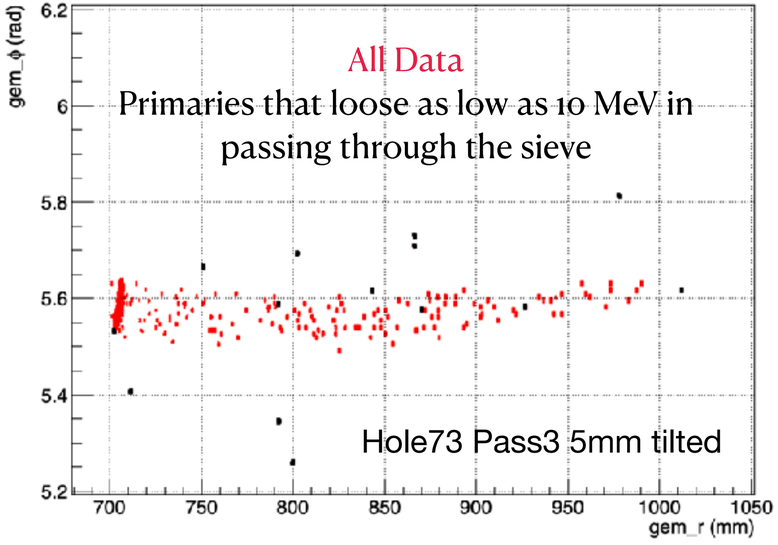


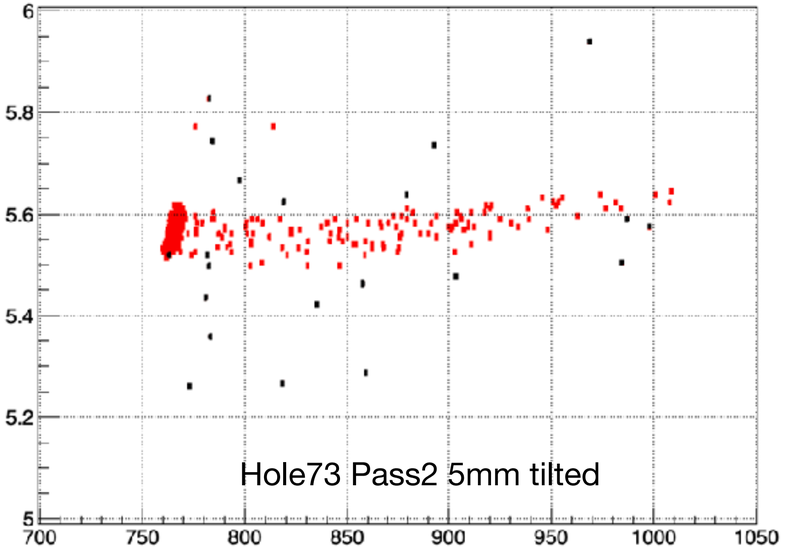
Rate in Bin 1	9mm Untilted	5mm Untilted	5 mm Tilted
Pass 1	4.2E+05	9.4E+04	1.3E+05
Pass 2	1.2E+05	3E+04	3.88E+04
Pass 3	6.3E+04	1.6E+04	2.12E+04

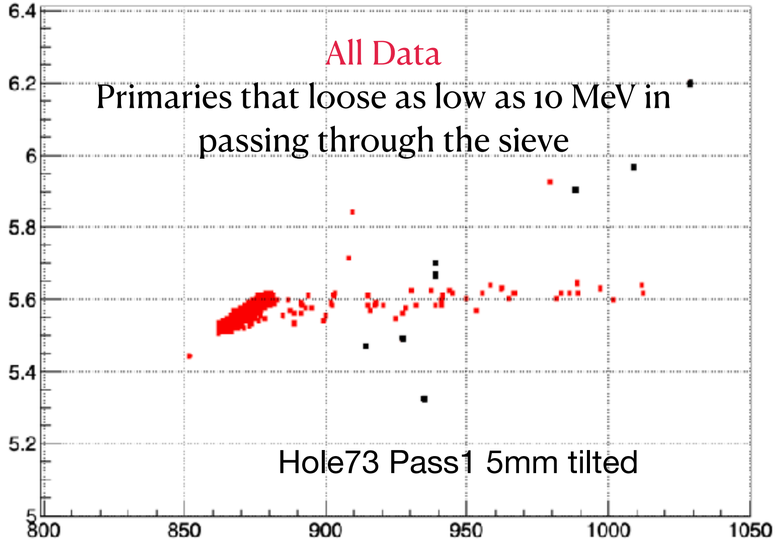

gem_ϕ (rad)
gem_r (mm)
Hole73 Pass3 5mm Untilted

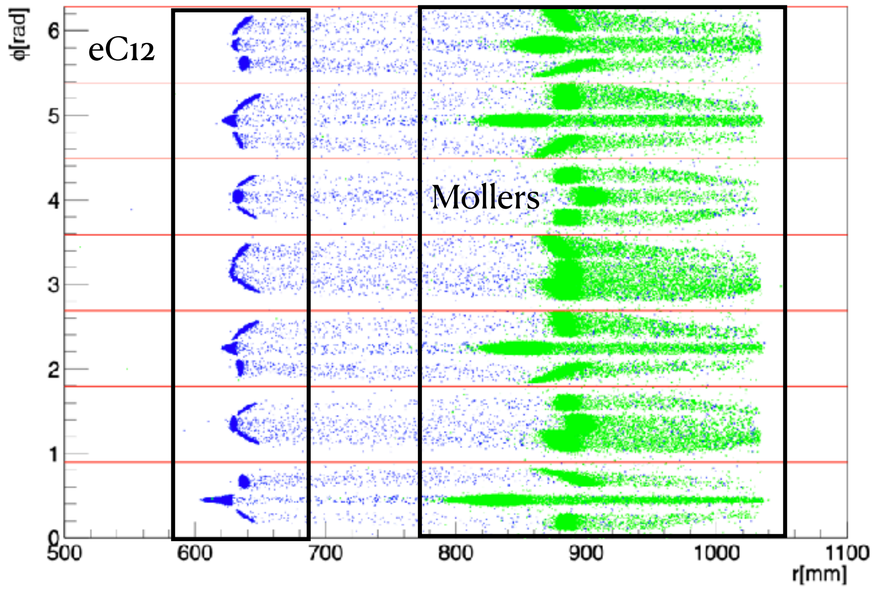

Hole73 Pass2 5mm Untilted

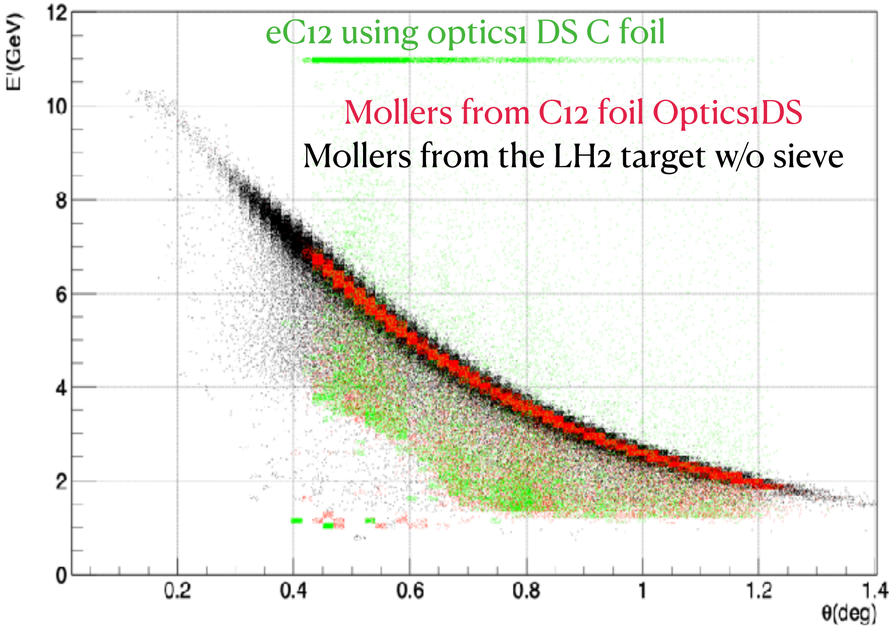

Hole73 Pass1 5mm Untilted

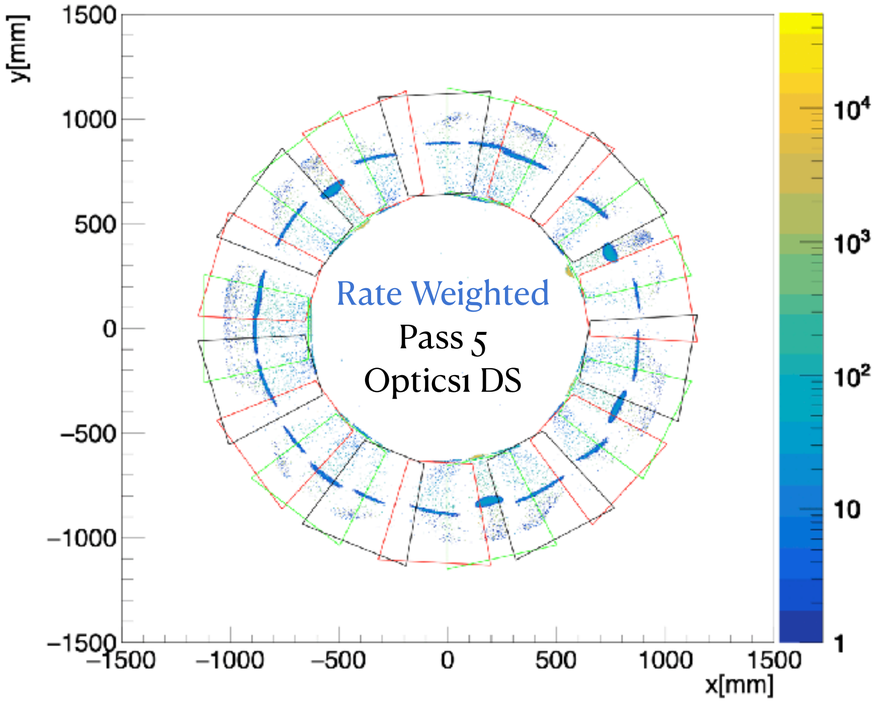

gem_ϕ (rad)
All Data
Primaries that loose as low as 10 MeV in passing through the sieve
Hole73 Pass3 5mm tilted
gem_r (mm)

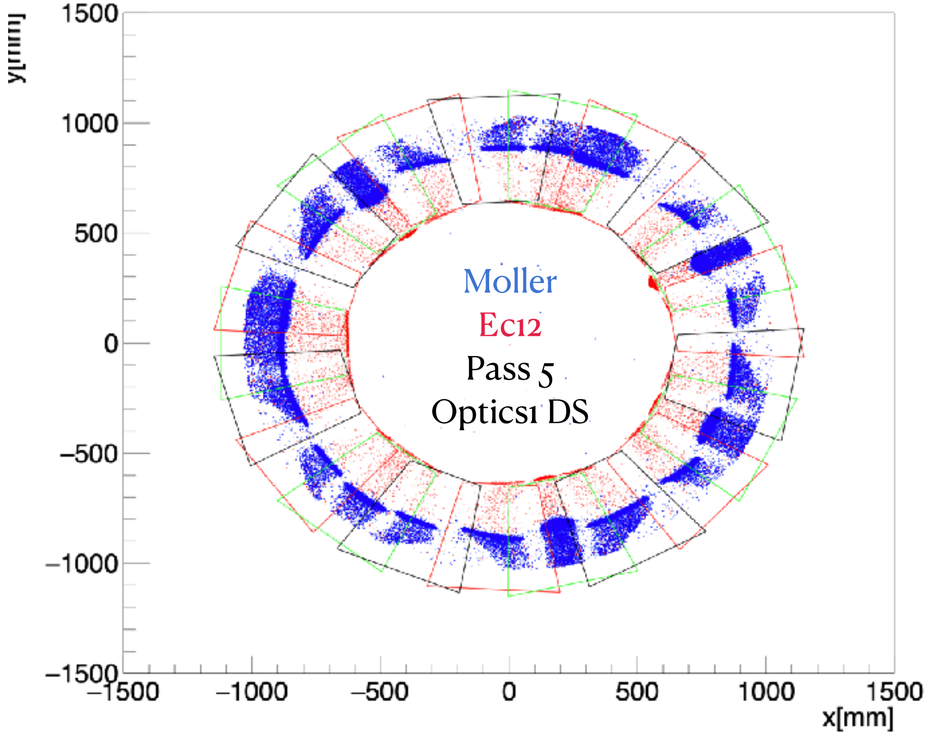

Hole73 Pass2 5mm tilted


All Data
Primaries that loose as low as 10 MeV in passing through the sieve
Hole73 Pass1 5mm tilted









The inner radius for the GEM active area is 640 mm
For the outer layer it is 1120 mm

At pass 5 the C12 scattered electrons miss the GEM active area.