Ptarmigan + ETTSim

Problems:

1) Ptarmigan simulation take up a lot of space
   - 100MB for 1M electrons, only <10K (<1%) interacting
2) Ptarmigan input for ETTSim takes long to simulate
   1) Mainly interested in electrons on screen

Solution:

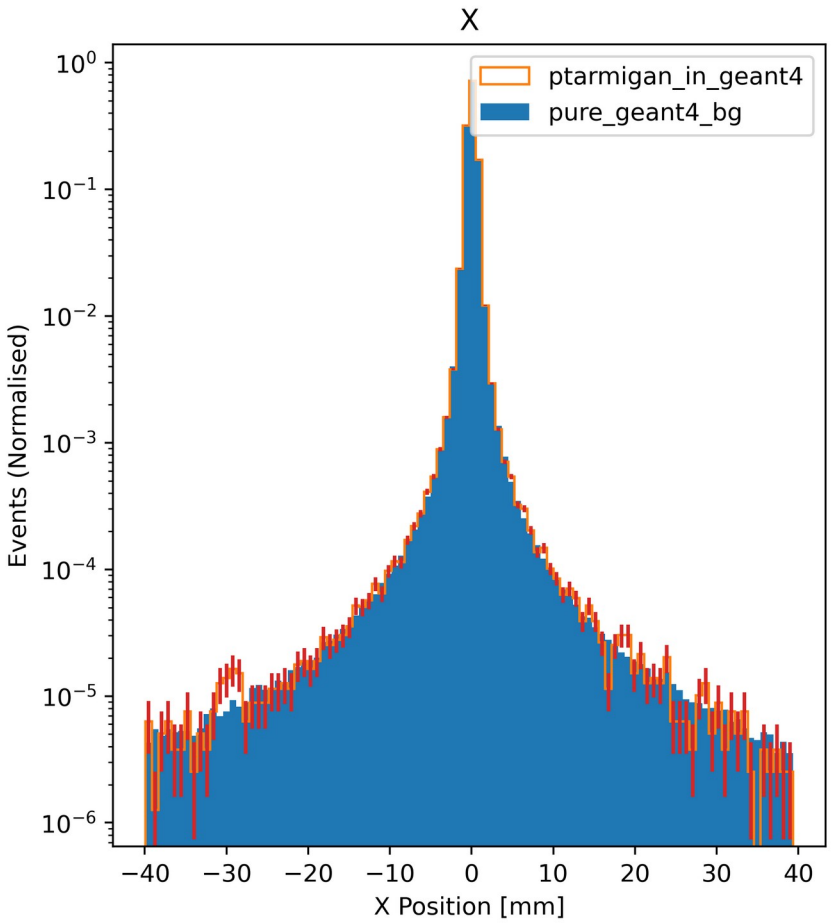
Modify ETTsim to mimic Ptarmigan beam creation + Only save interacting electrons in Ptarmigan.

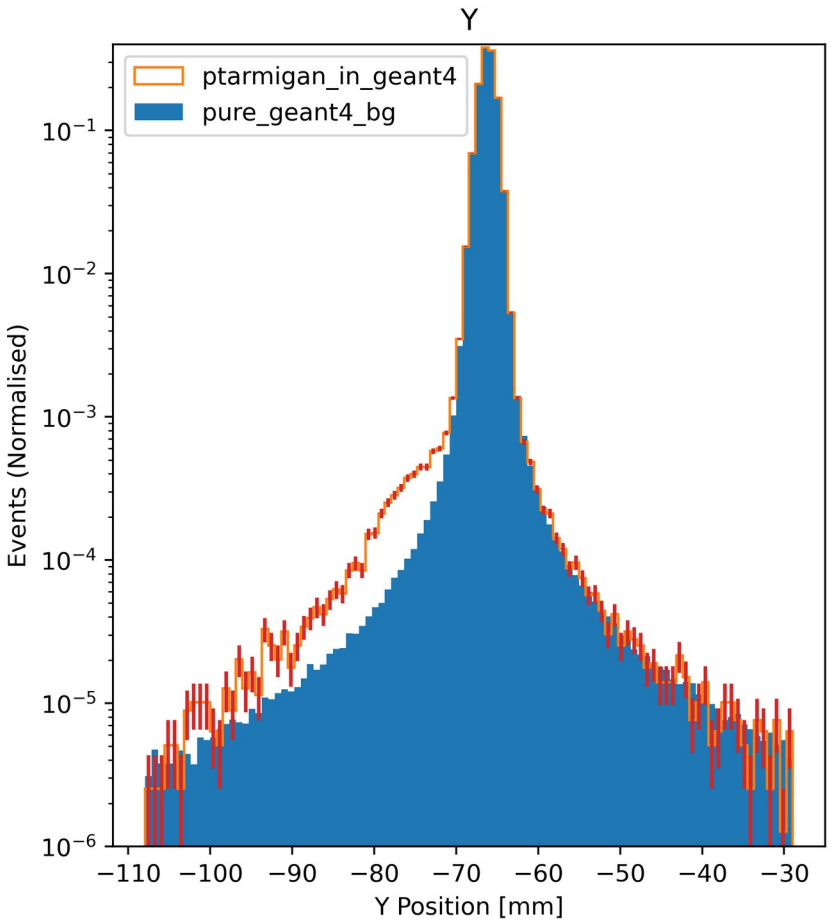
- Reduces Ptarmigan output file to < 1MB for 1M electrons
- Quickly generate many electrons with ETTSim and propagate through beamline
- Save only important data of electrons on screen

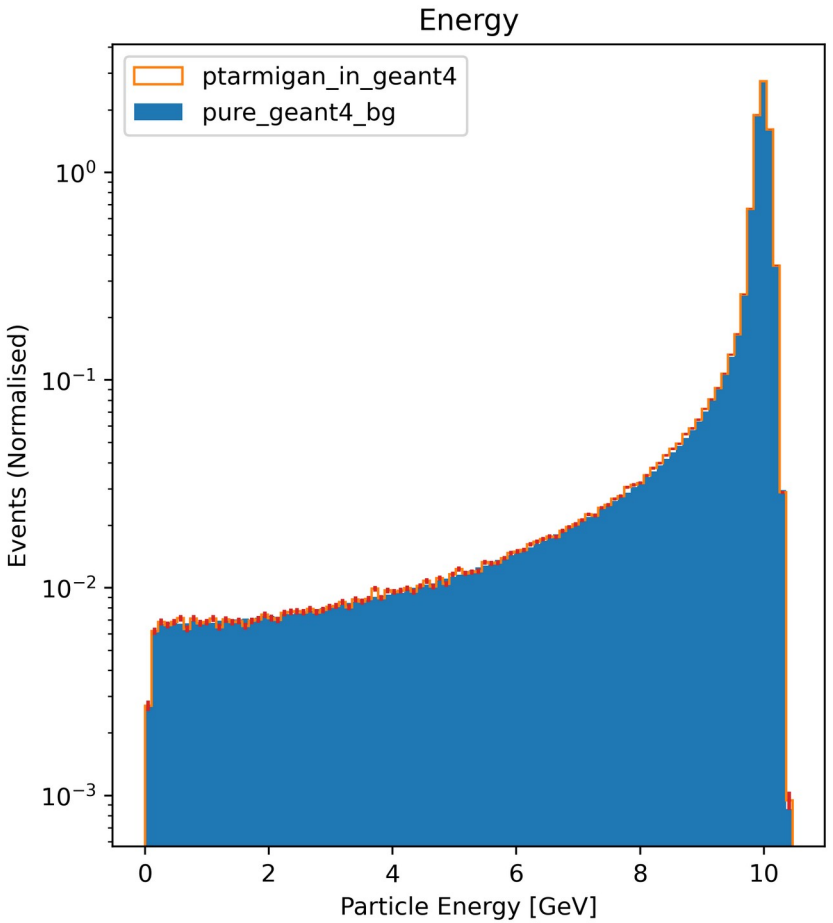
  → 200 MB for 10M electrons on screen

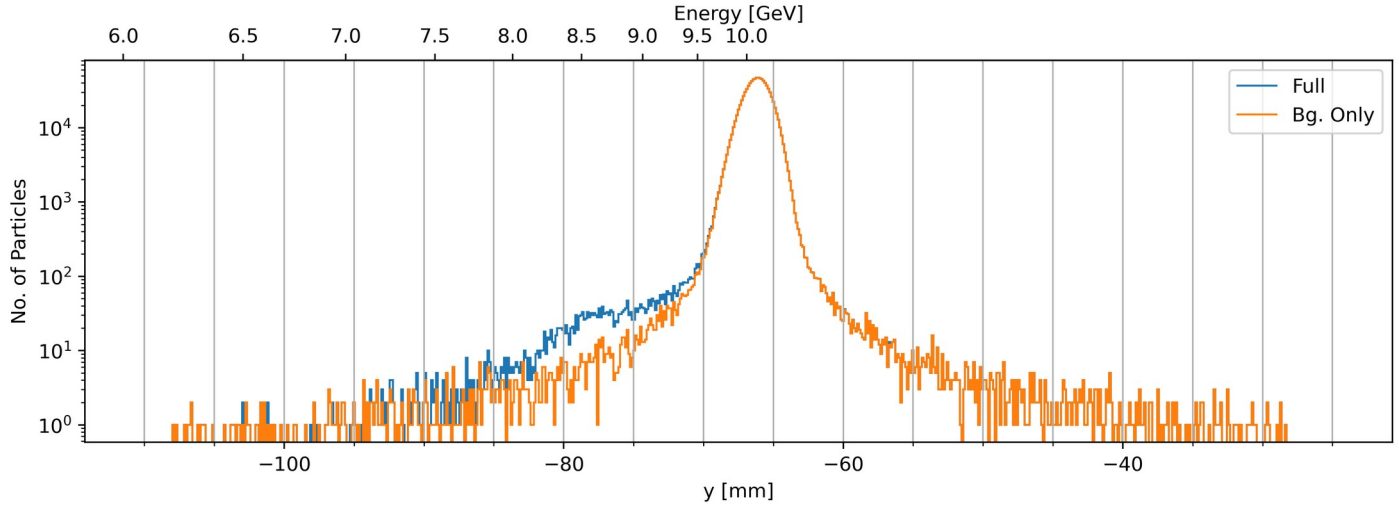
- Background electrons can be reused for different laser settings (New data needed for different beam(line) settings)

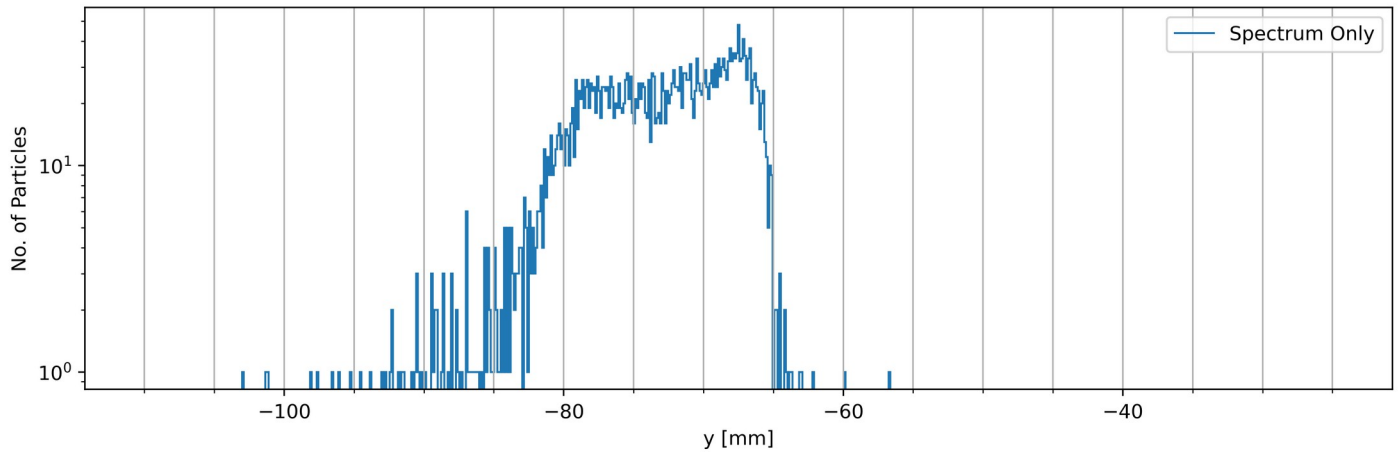
Ptarmigan + ETTSim

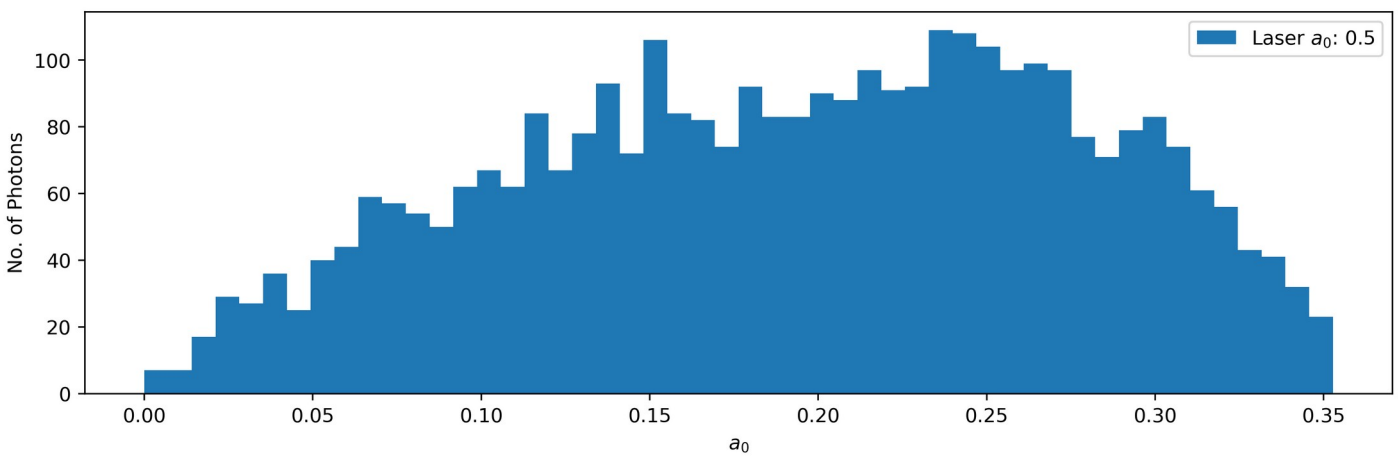


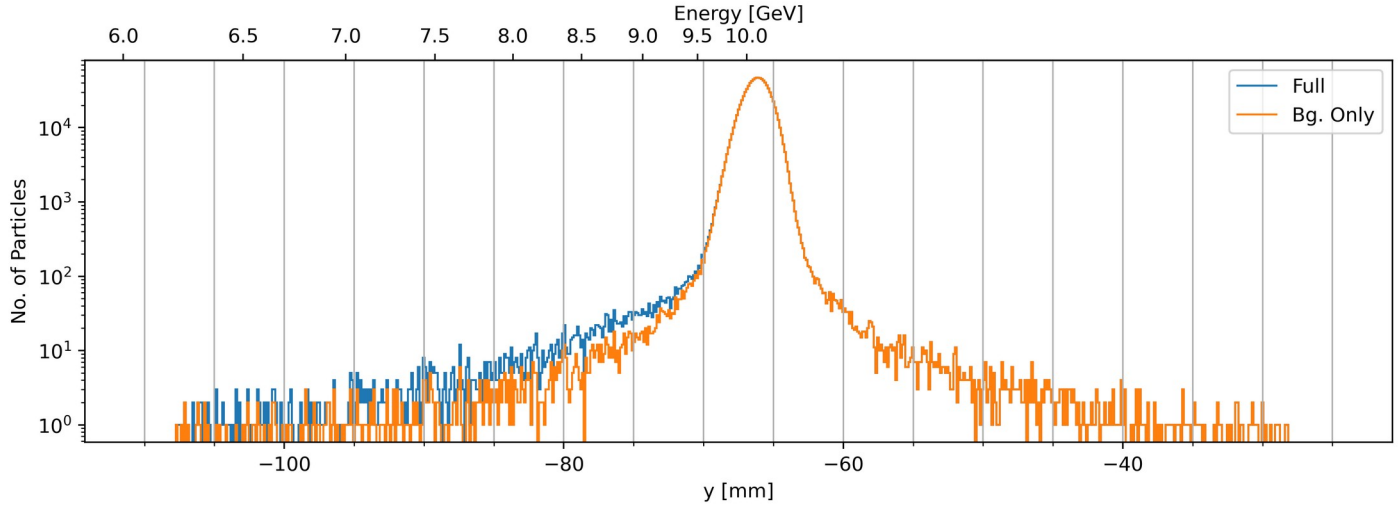


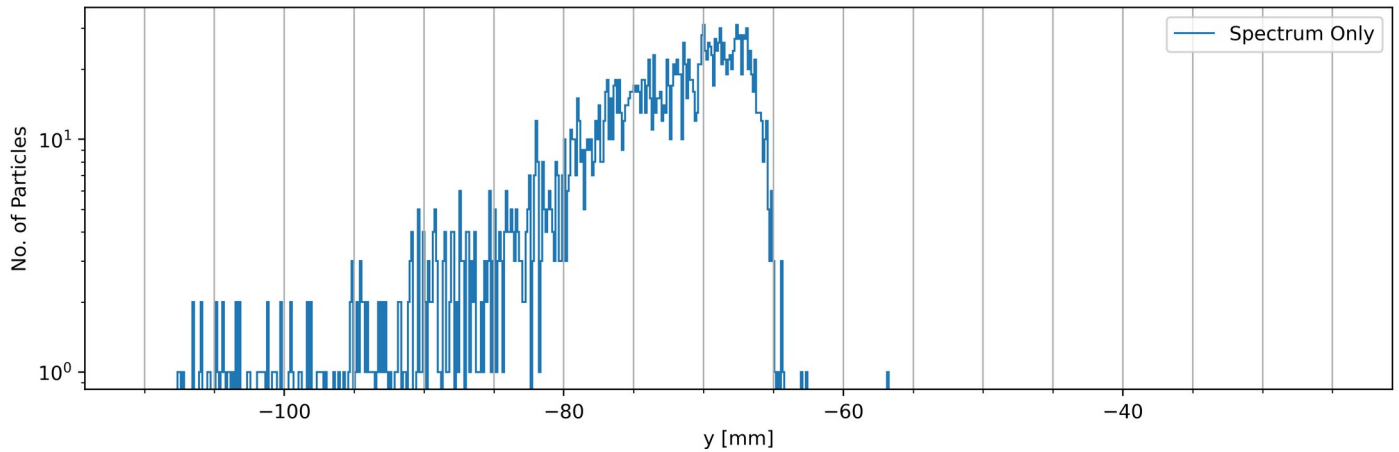


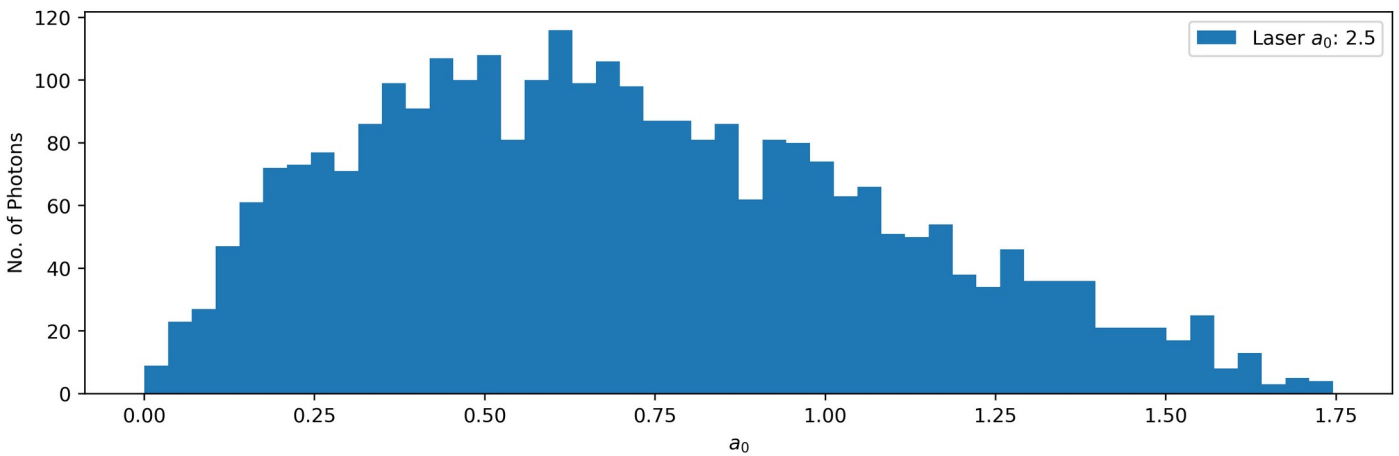

Energy [GeV]
6.0
6.5
7.0
7.5
8.0
8.5
9.0
9.5
10.0
Full
Bg. Only
No. of Particles
y [mm]

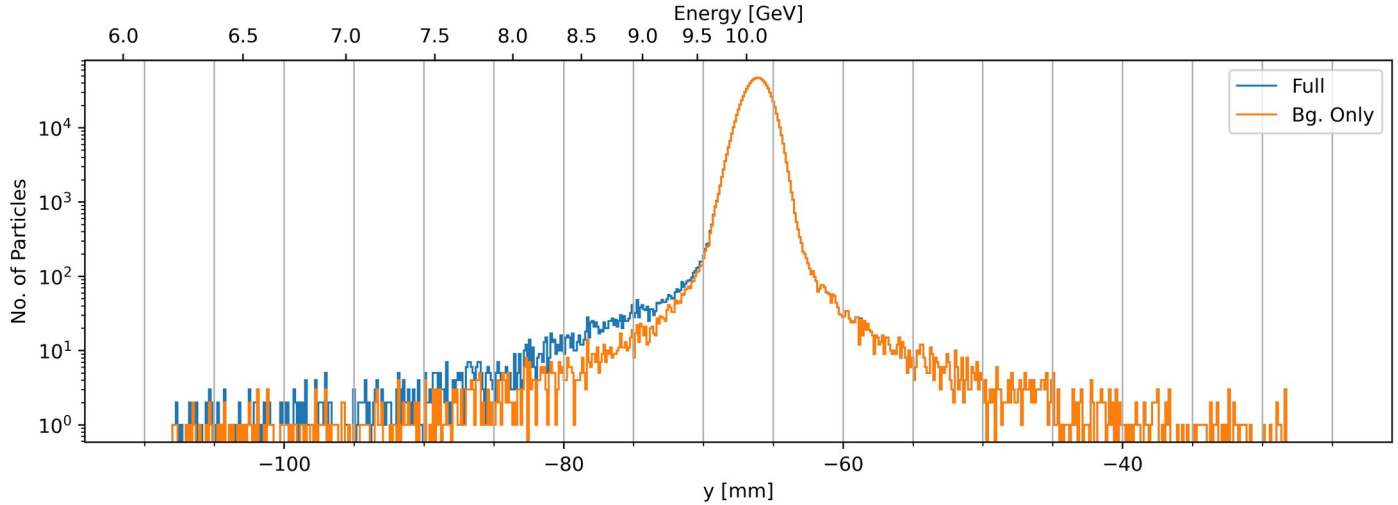

Spectrum Only
No. of Particles
y [mm]

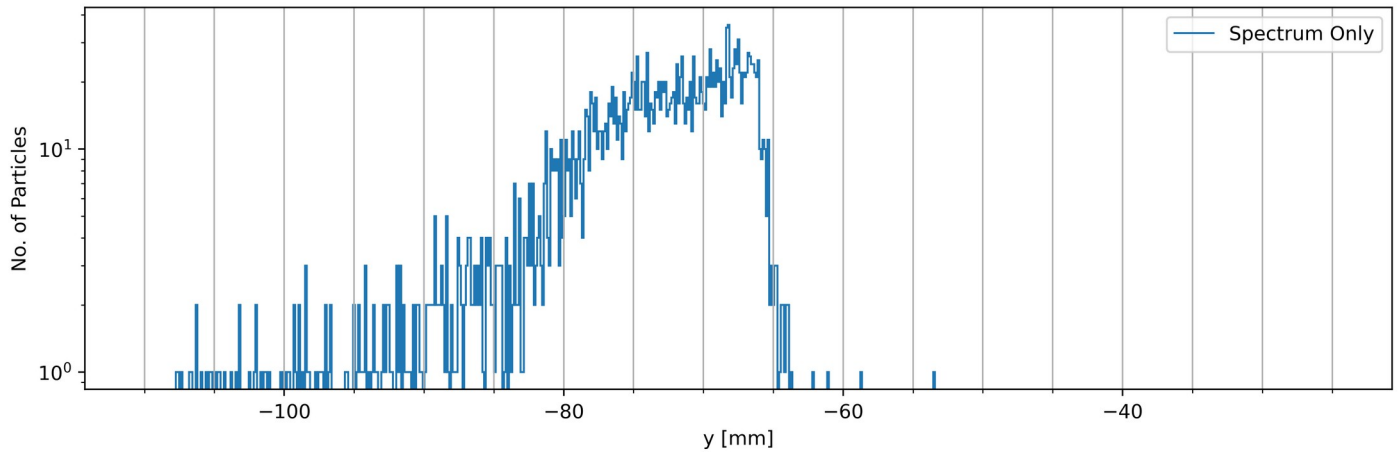

Laser a_0: 0.5
No. of Photons
a_0

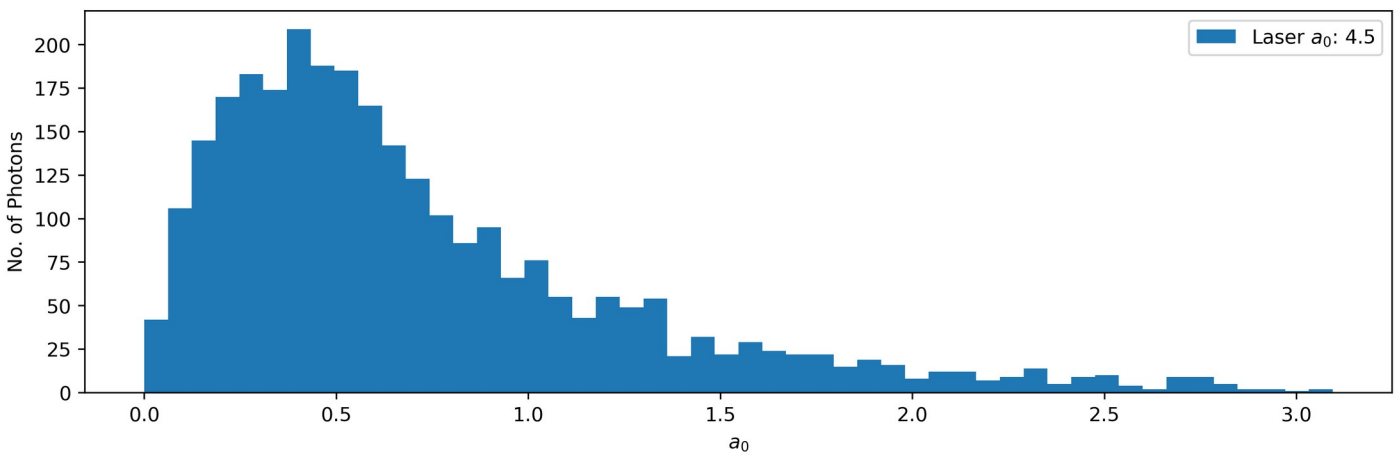

Energy [GeV]
6.0
6.5
7.0
7.5
8.0
8.5
9.0
9.5
10.0
Full
Bg. Only
No. of Particles
y [mm]


Spectrum Only
No. of Particles
y [mm]


Laser a_0: 2.5
No. of Photons
a_0


Energy [GeV]
6.0
6.5
7.0
7.5
8.0
8.5
9.0
9.5
10.0
Full
Bg. Only
No. of Particles
y [mm]


Spectrum Only
No. of Particles
y [mm]


Laser a_0: 4.5
No. of Photons
a_0