Analysis of different dump setups

Atanu Debnath

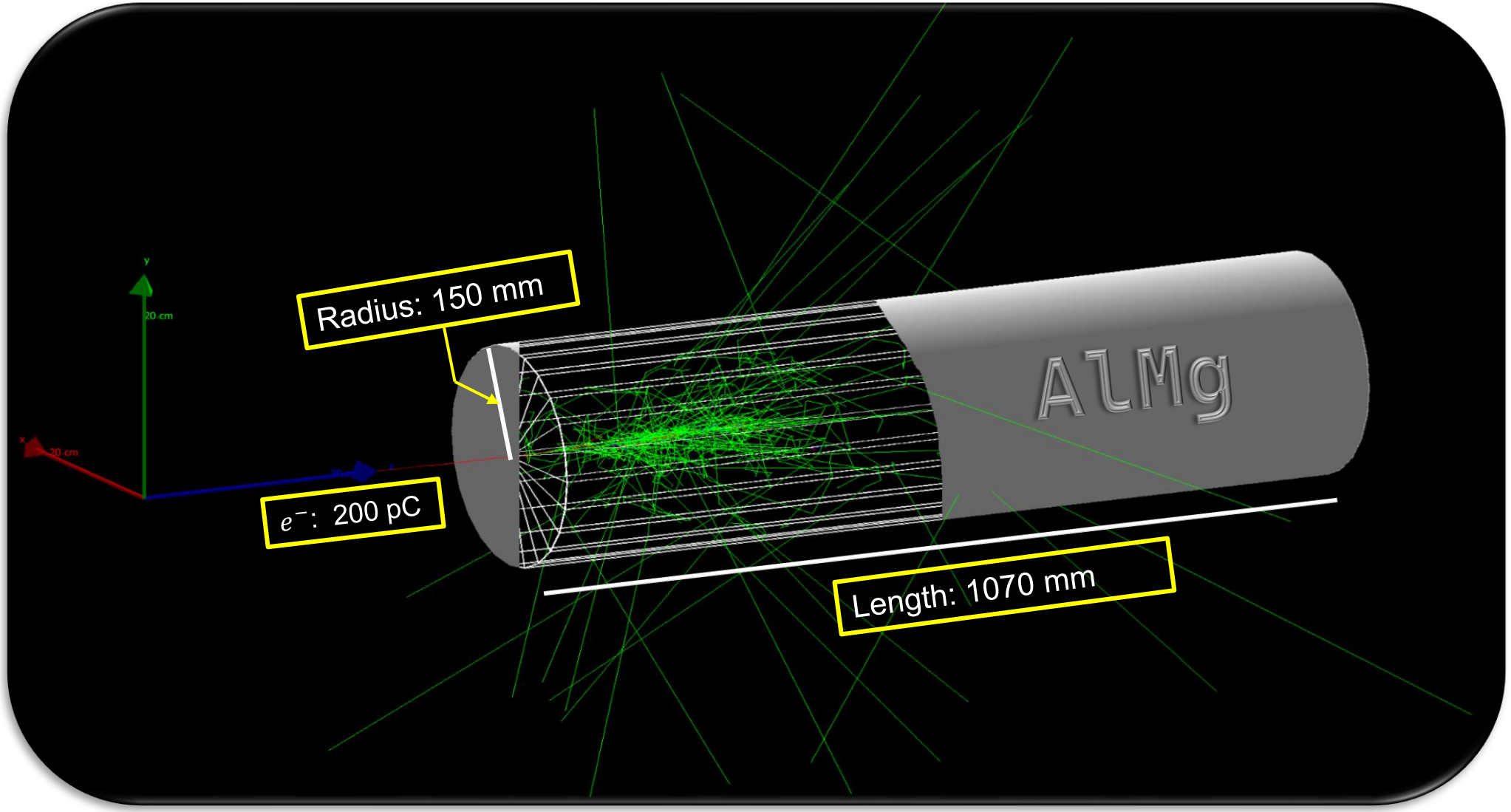
25.04.2025

LUXE DESY Meeting

HELMHOLTZ

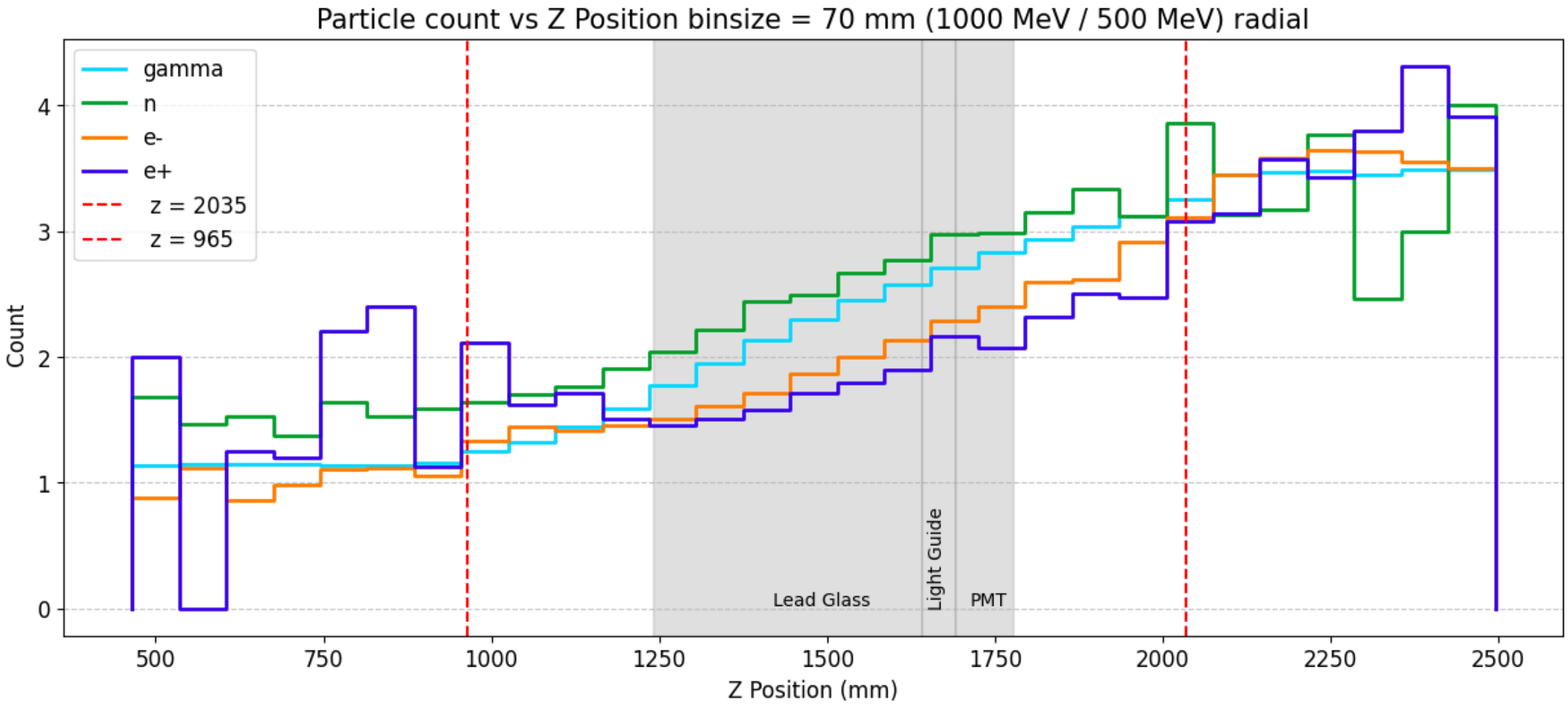
Experiment Setup (simplified)

FlashForward Dump



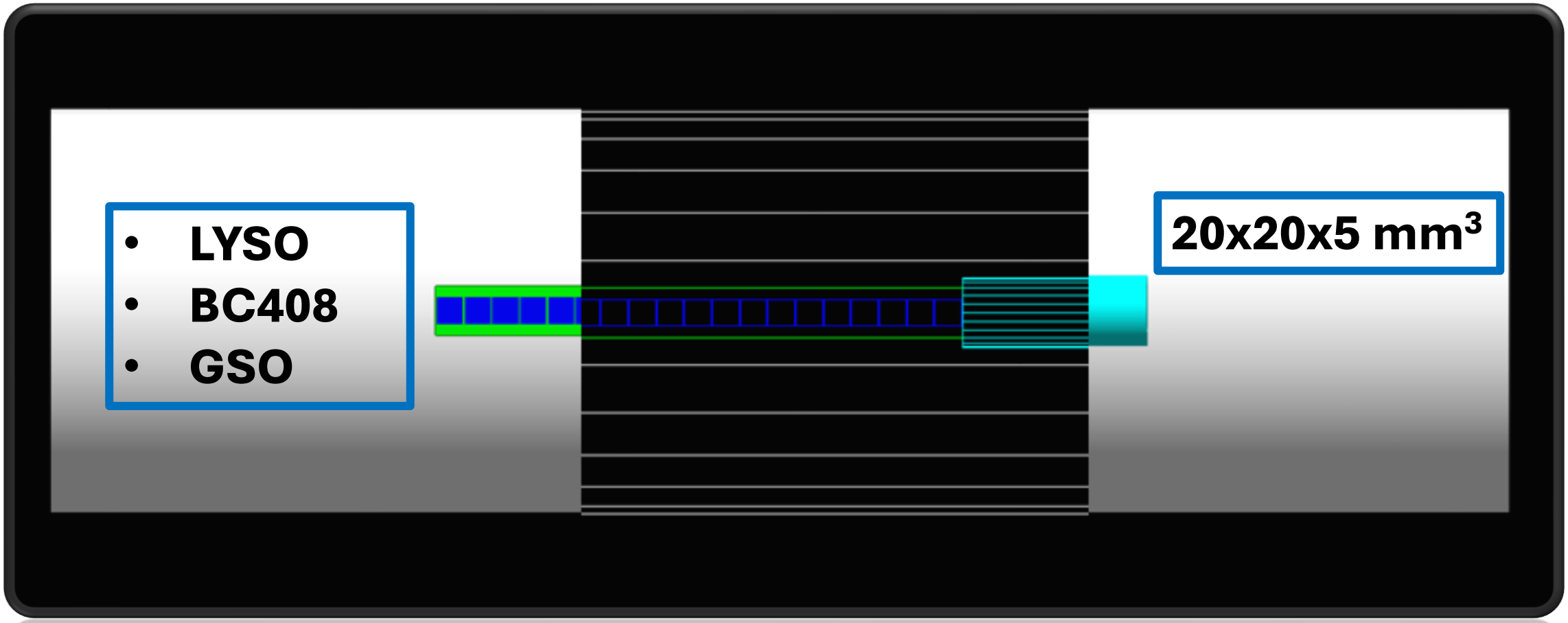
Δleakage ratio (z)

(Radial Detector)



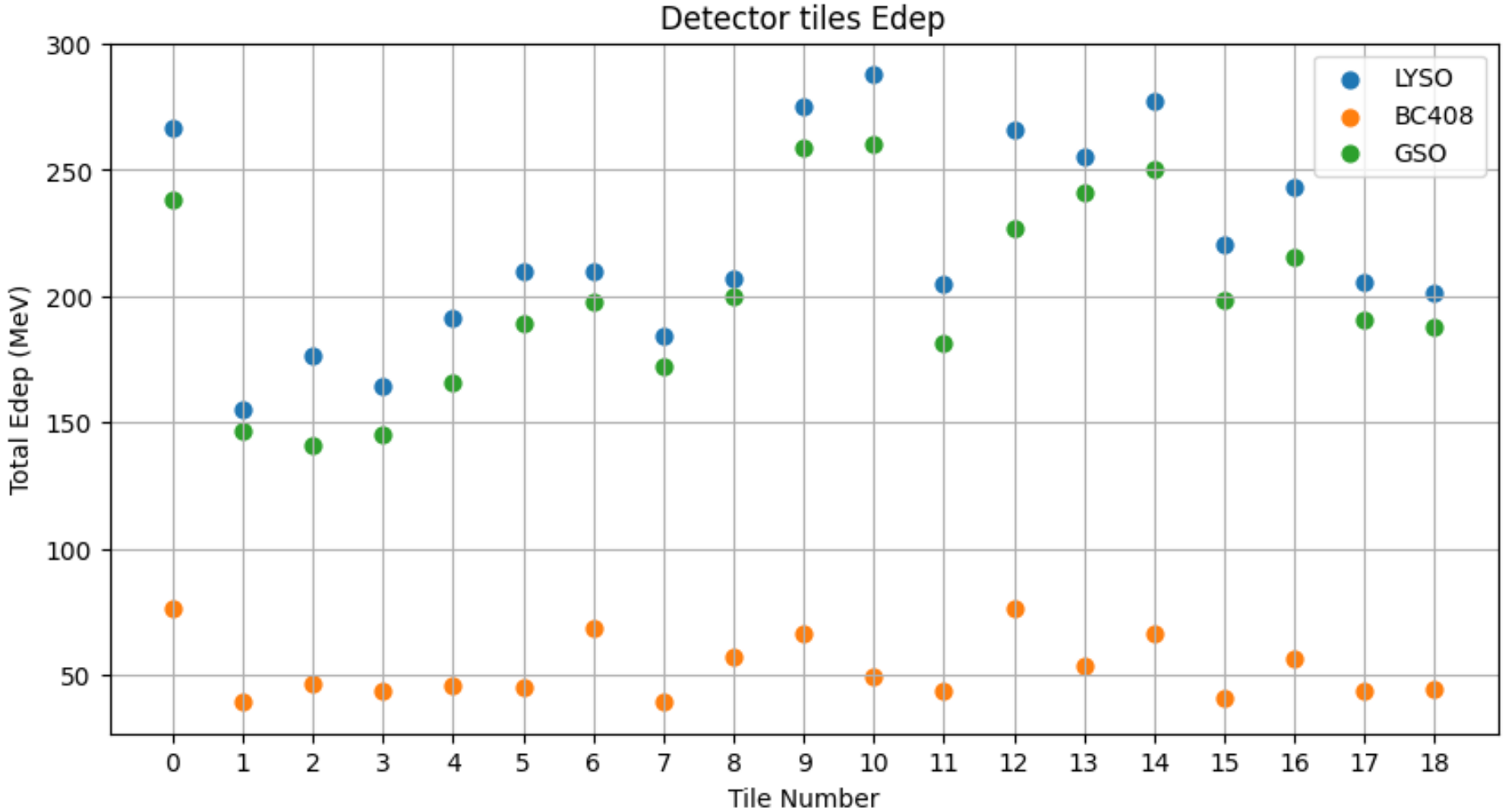
Experiment Setup_1

FlashForward Dump



Total Energy deposition

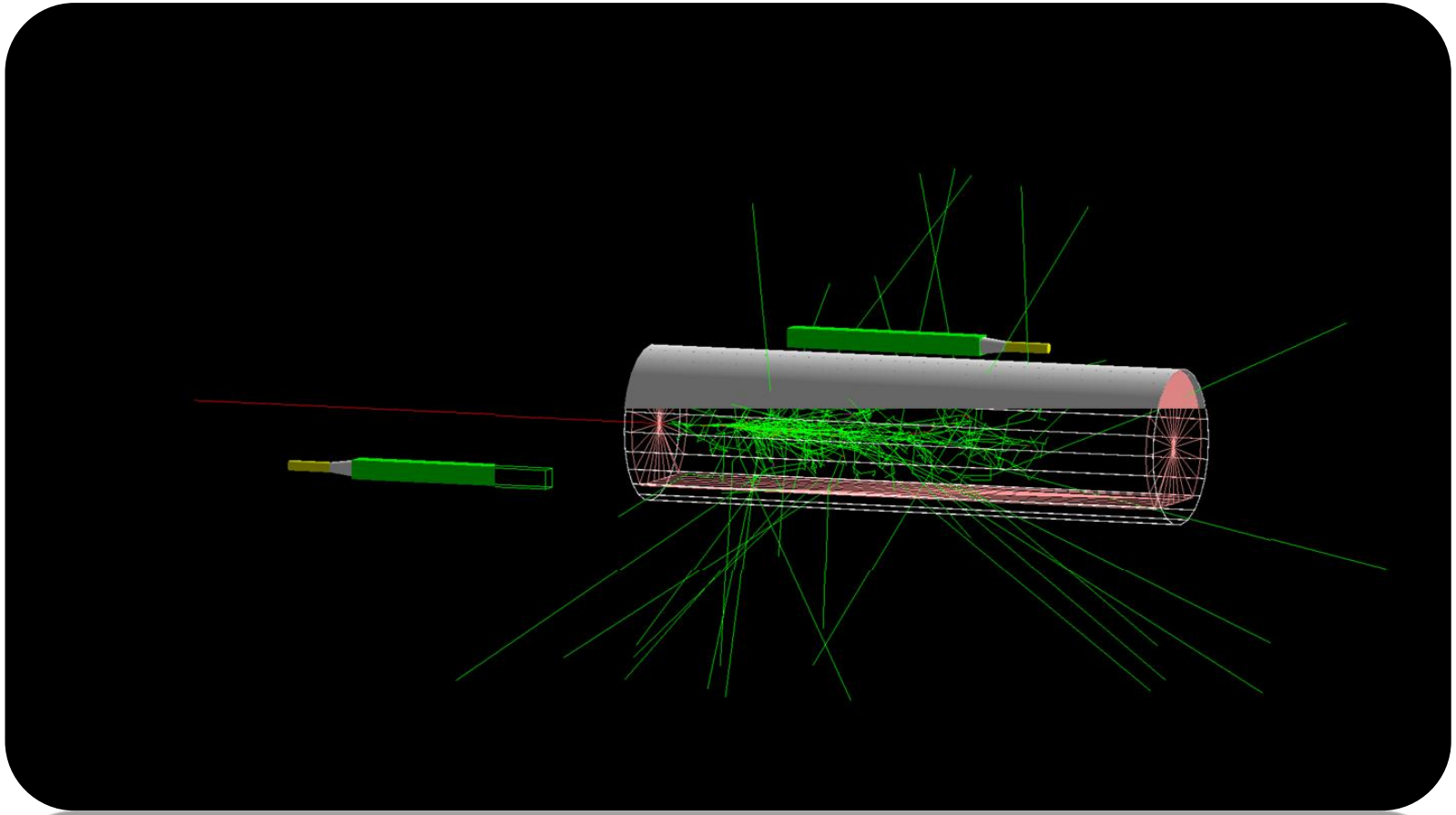
(LYSO, BC408, GSO)



Note: The energy is only for 1e6 events and not adjusted to the weights

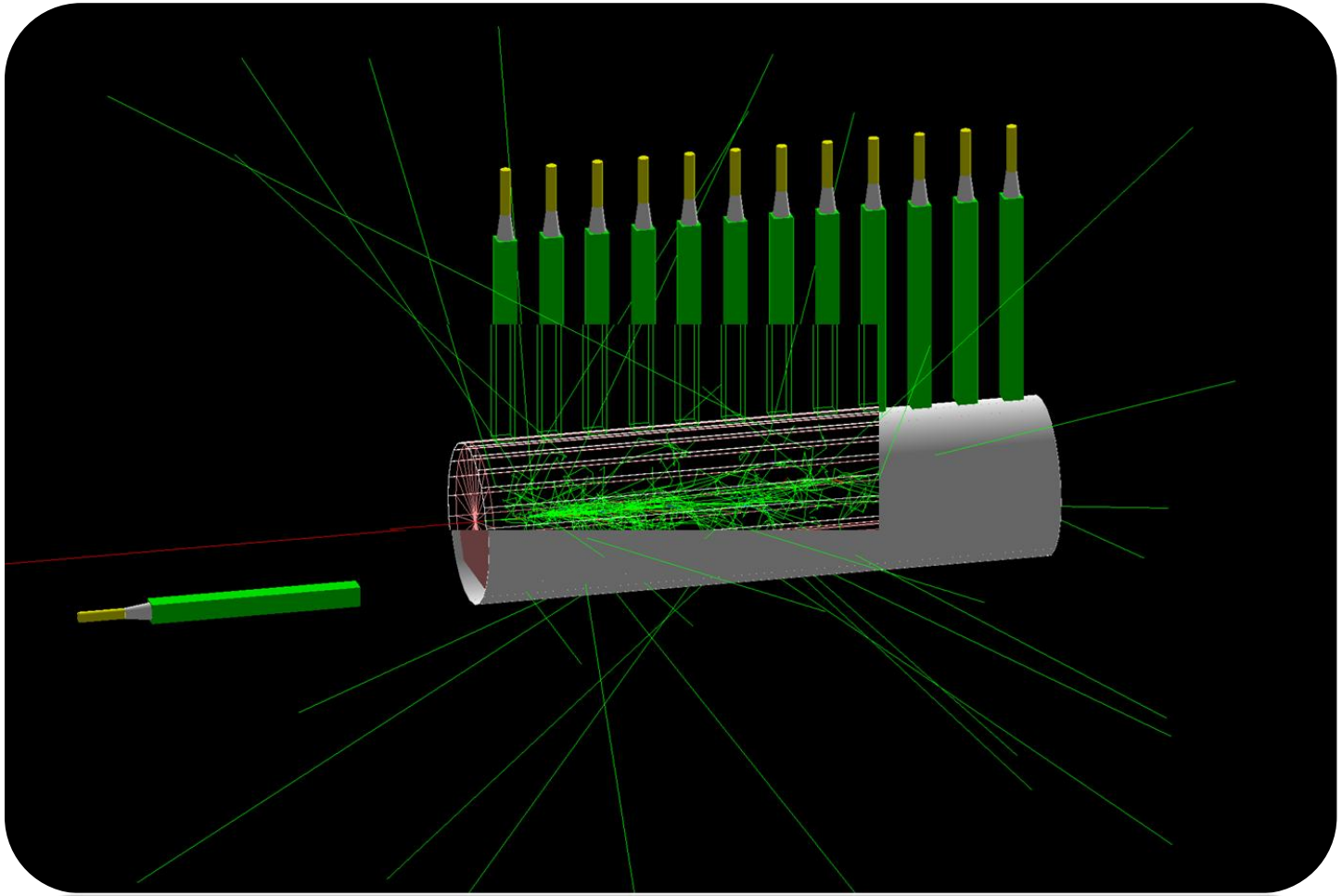
Experiment Setup_2.1

FlashForward Dump

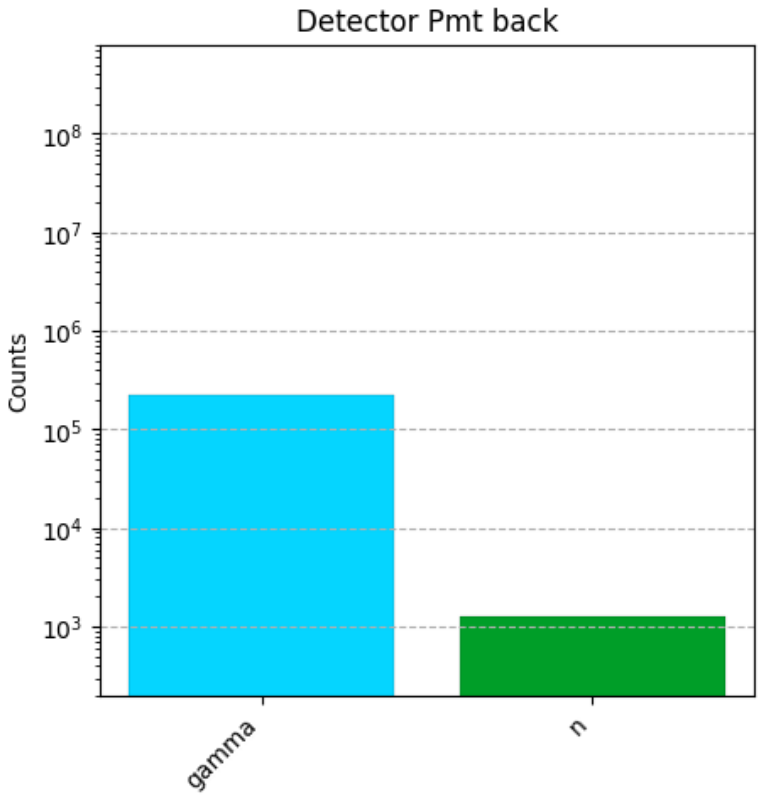


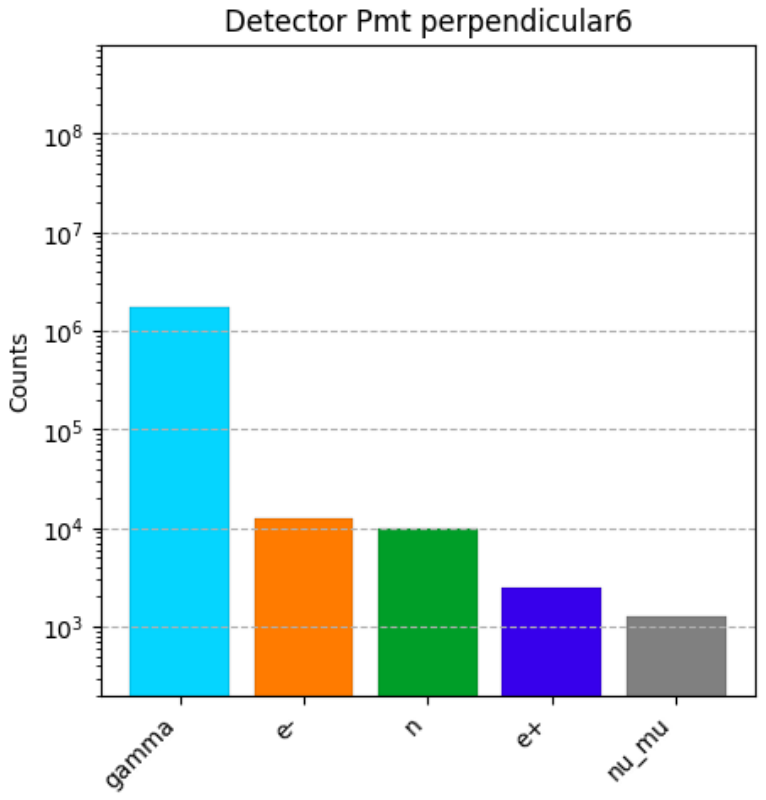
Experiment Setup_2.2

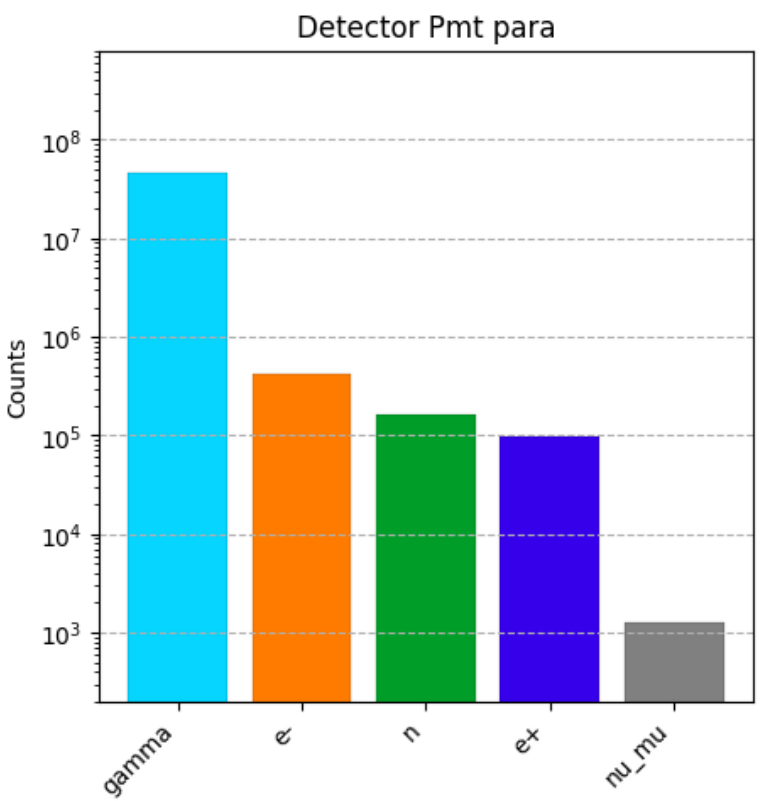
FlashForward Dump



Compare counts



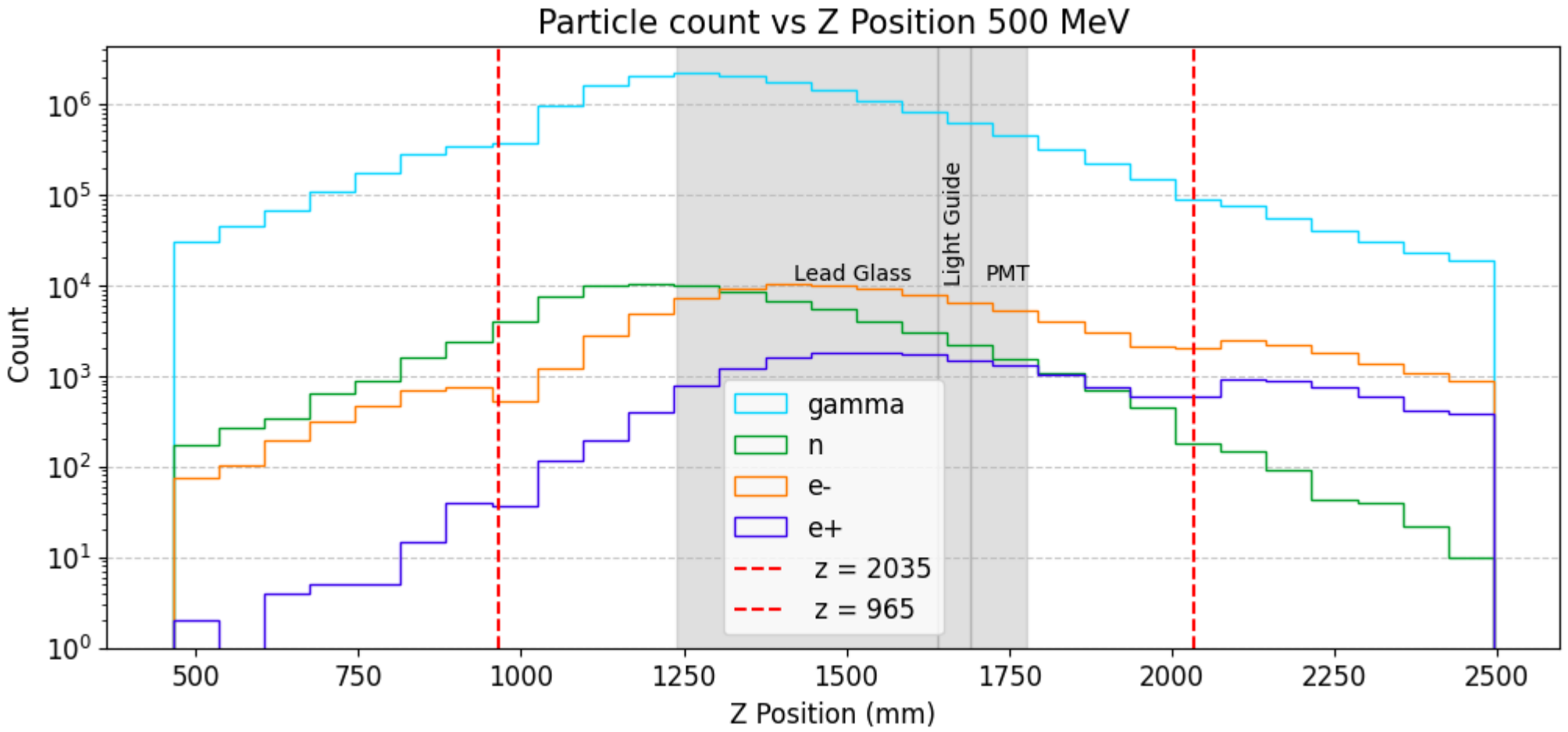




Backups

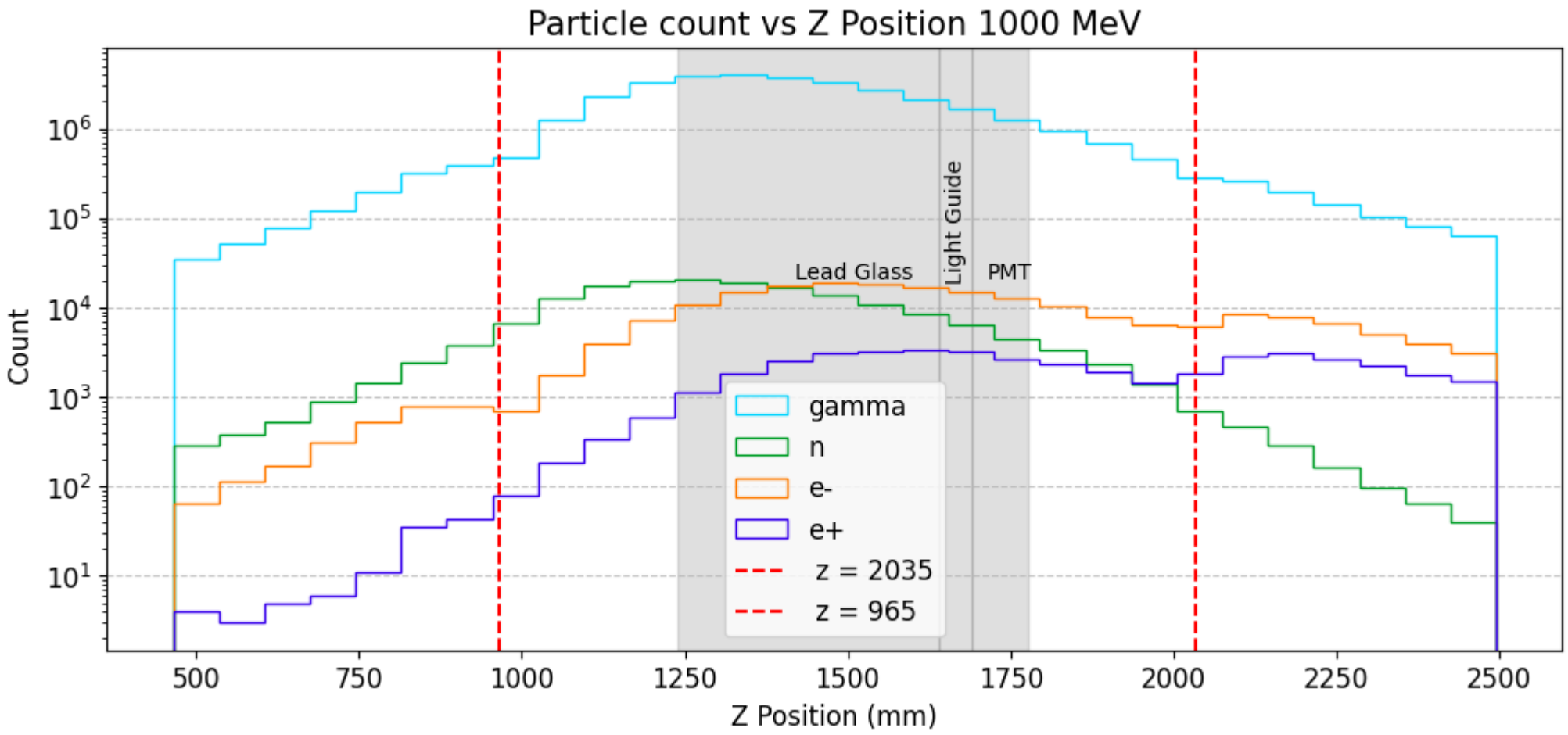
Particle Counts (once again!!)

500 MeV (Radial Detector)



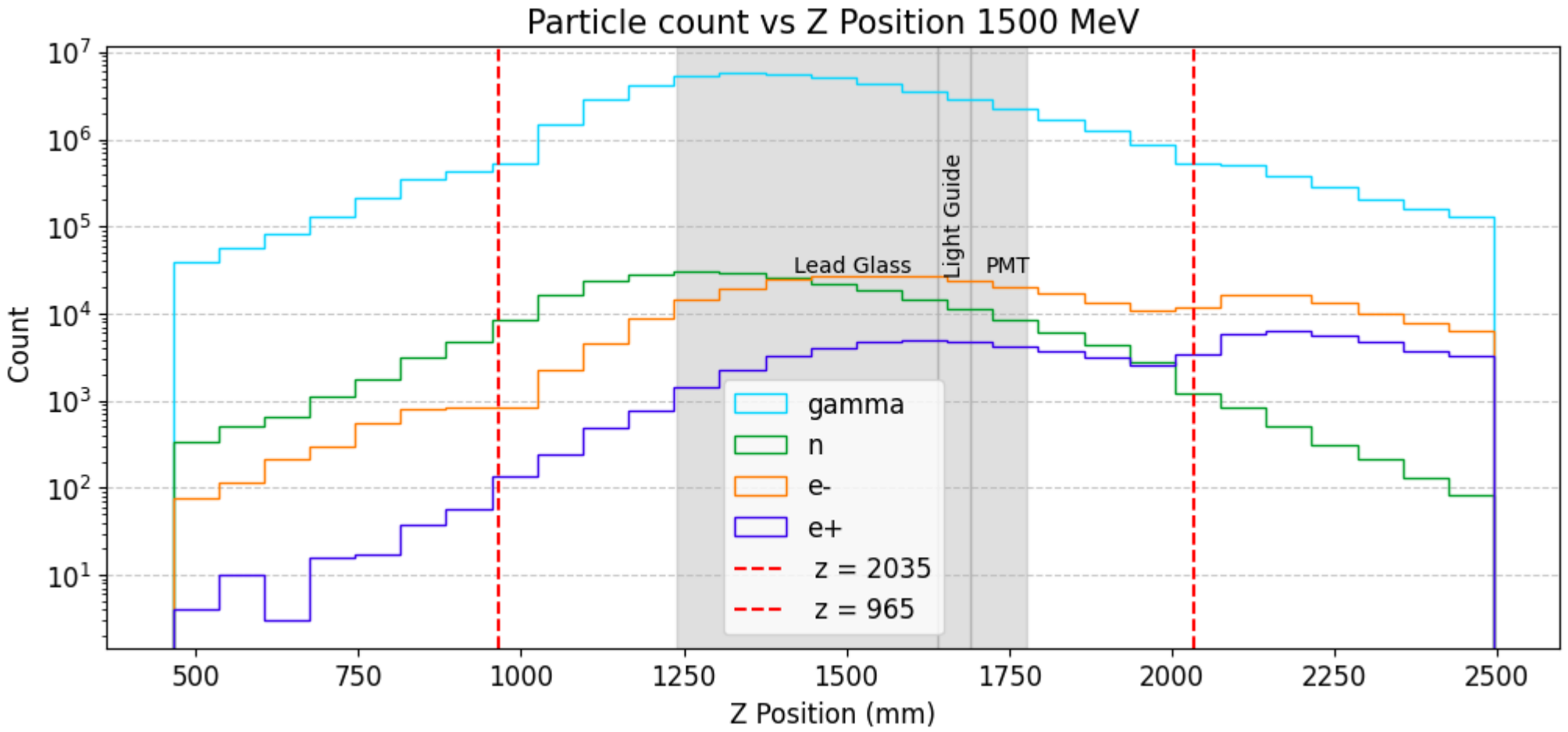
Particle Counts (once again!!)

1000 MeV (initial one) (Radial Detector)



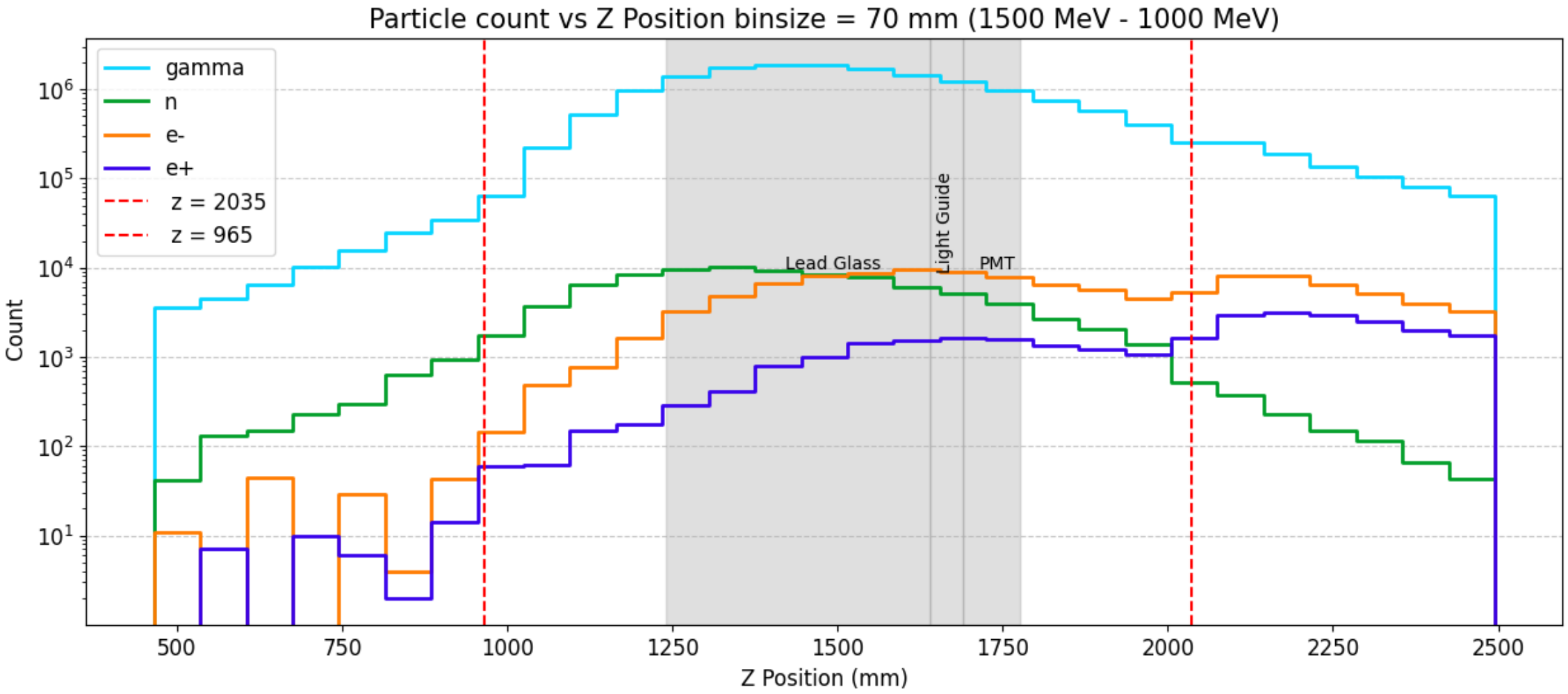
Particle Counts (once again!!)

1500 MeV (Radial Detector)



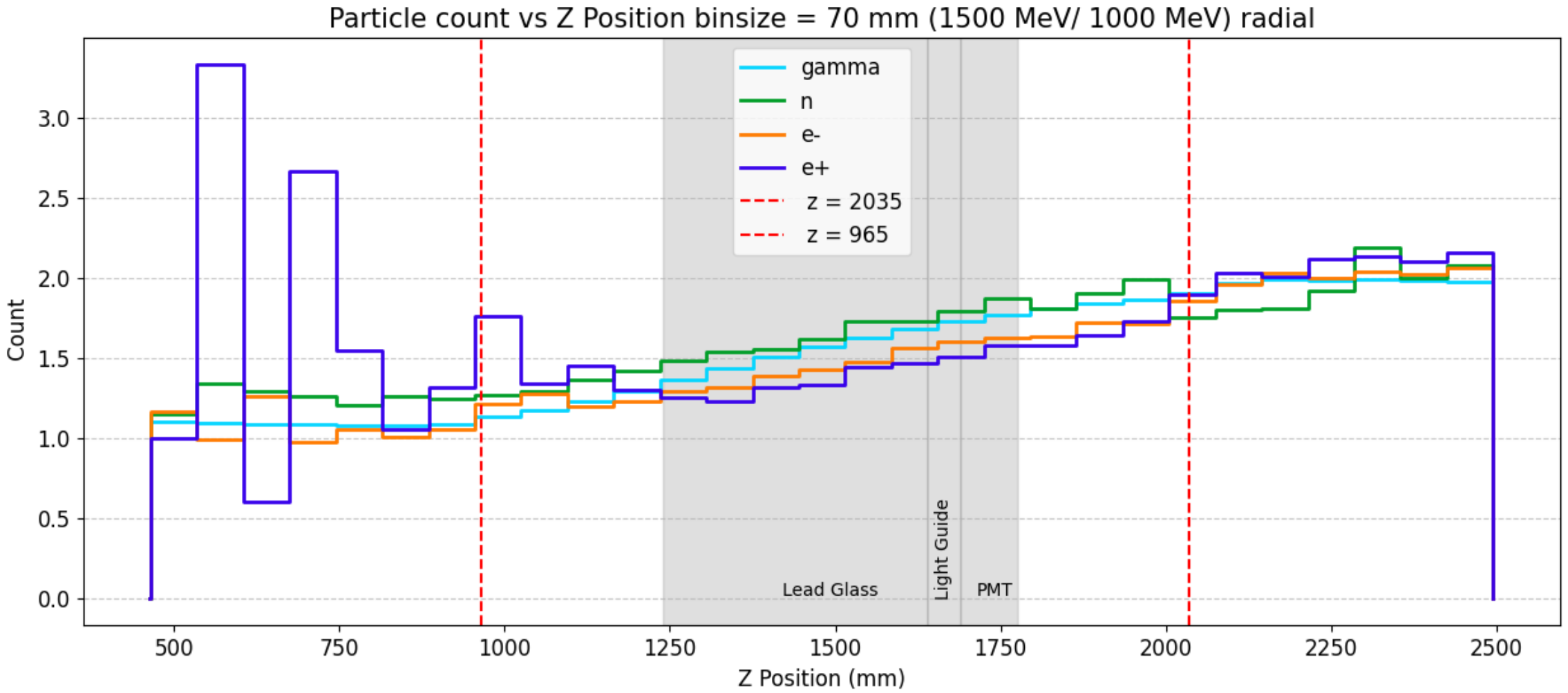
Δleakage difference (z)

(Radial Detector)



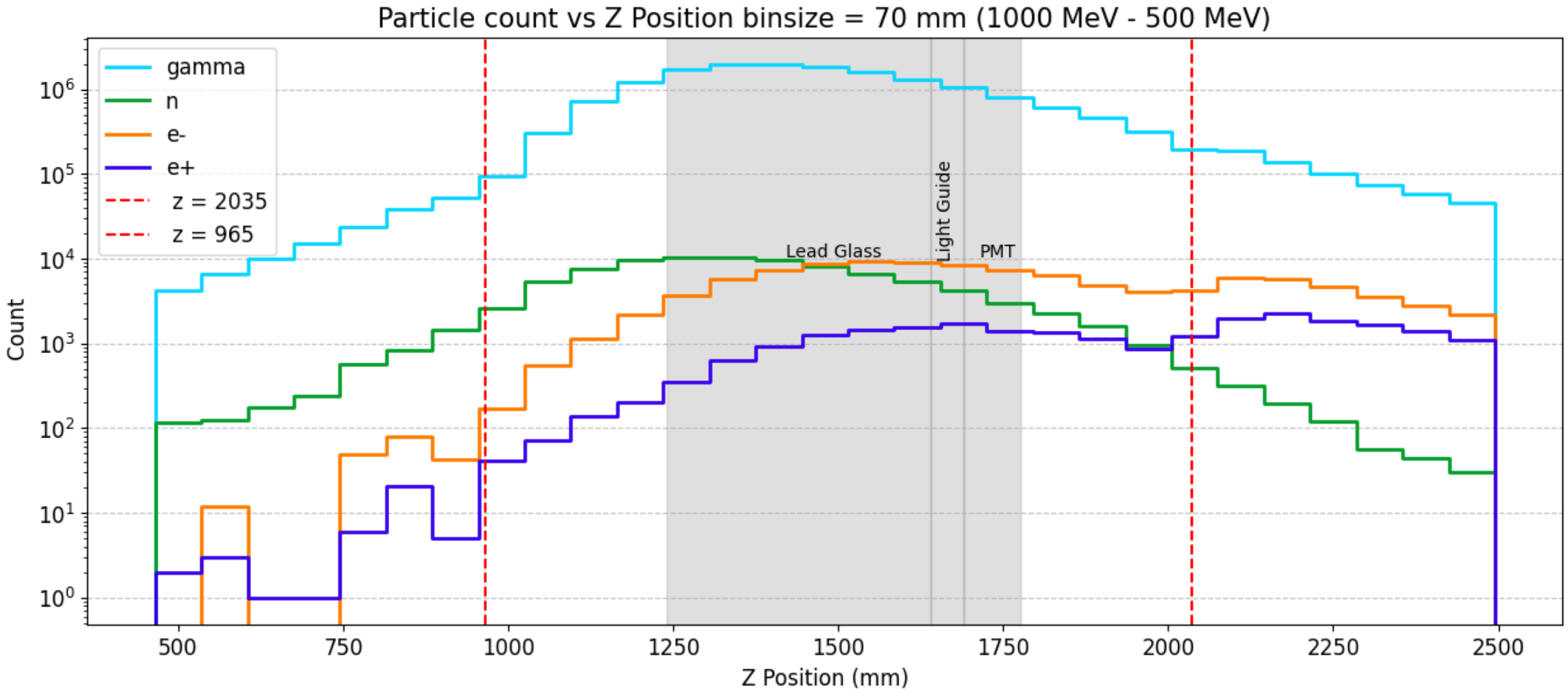
Δleakage ratio (z)

(Radial Detector)



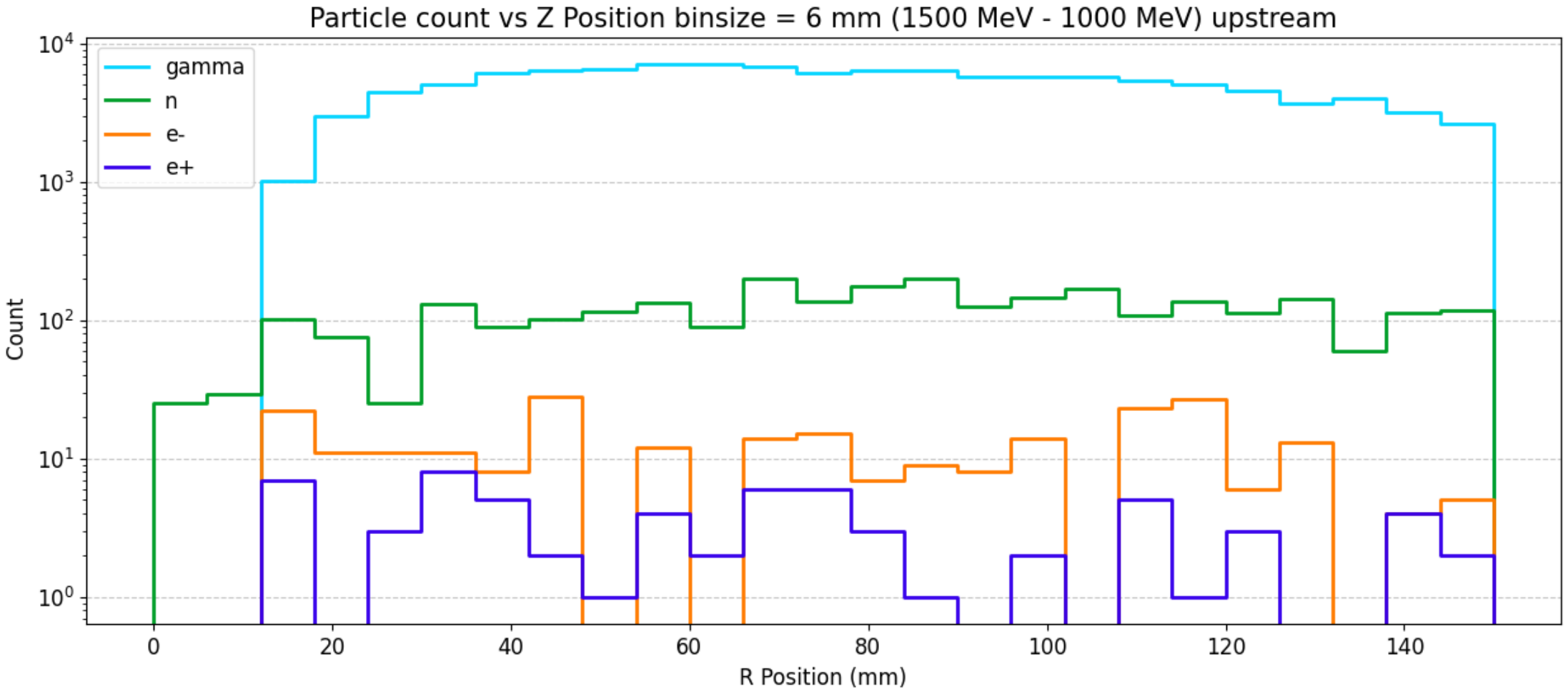
Δleakage difference (z)

(Radial Detector)



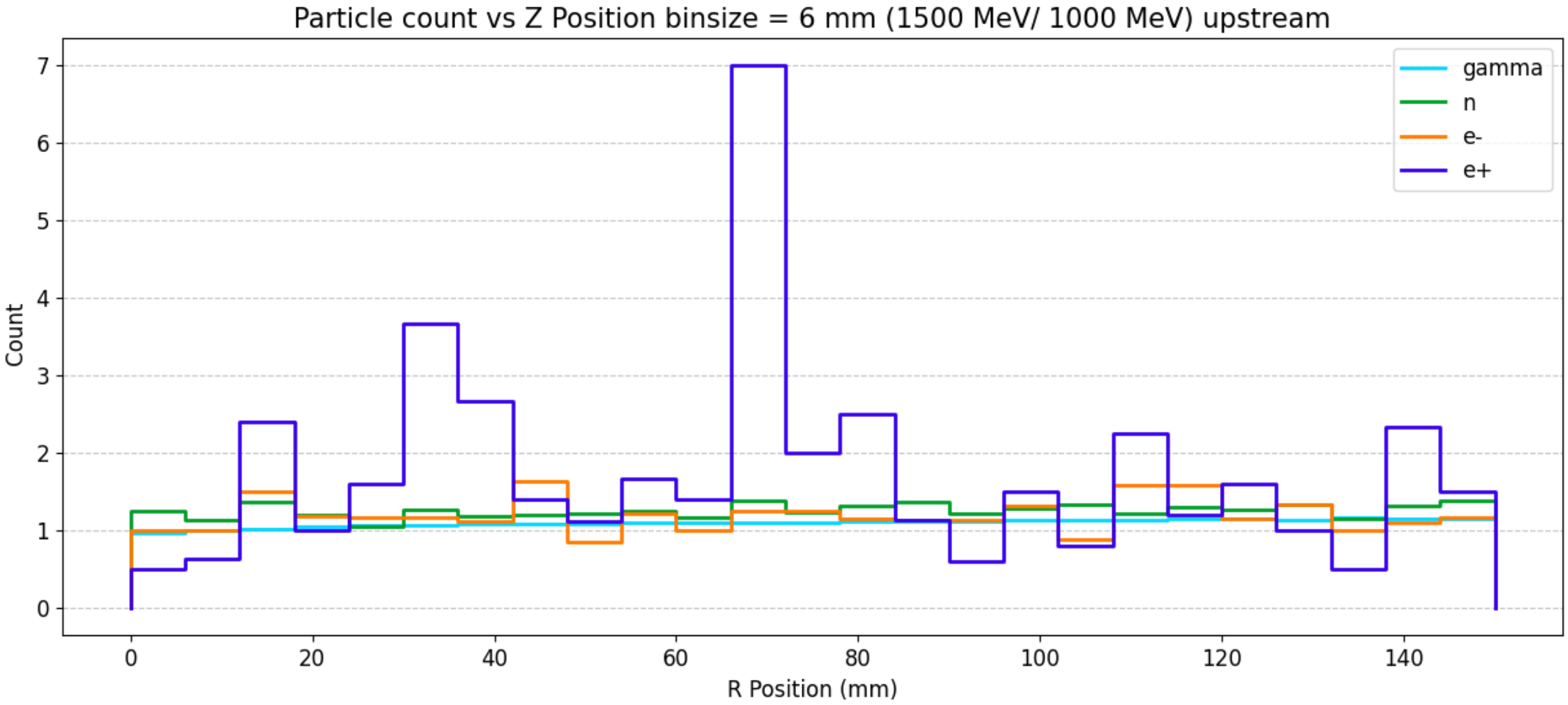
Δleakage difference (R)

(Upstream Detector)



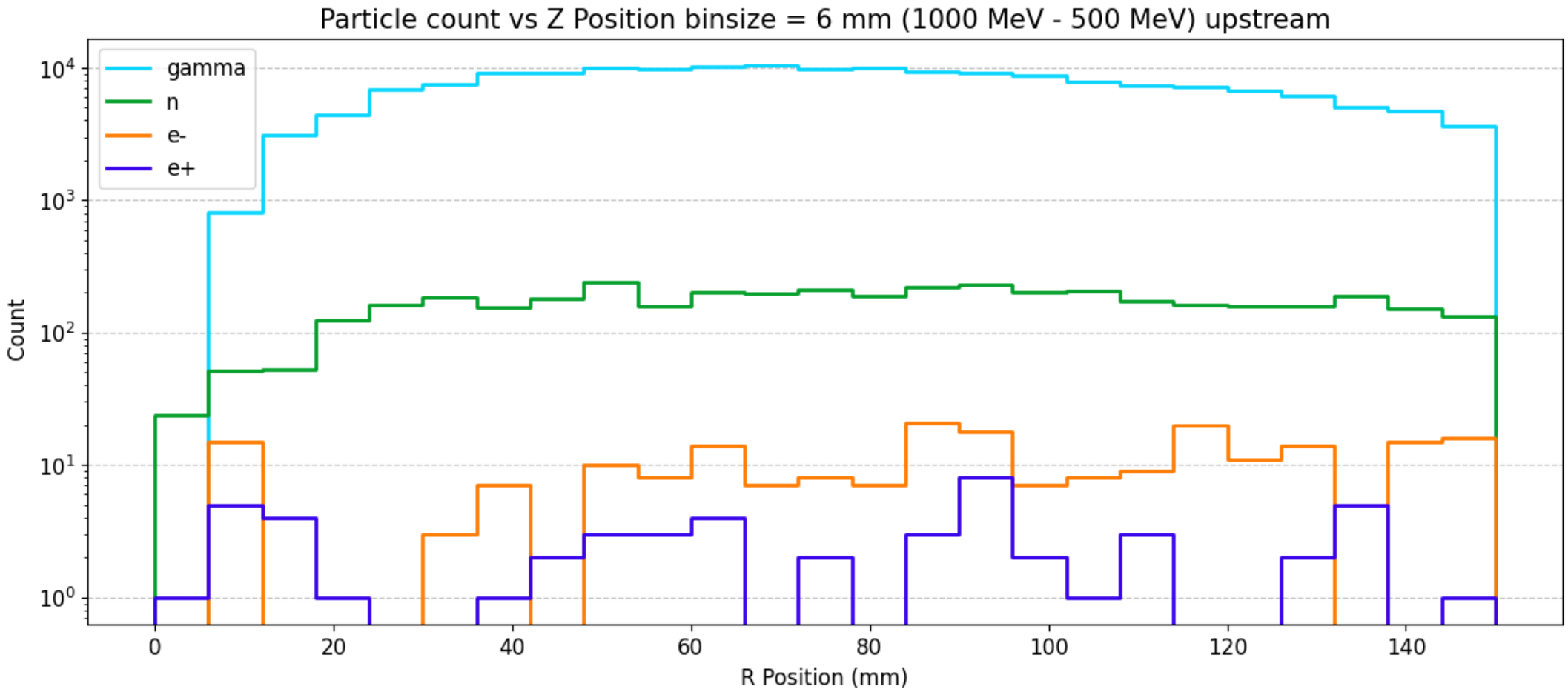
Δleakage ratio (R)

(Upstream Detector)



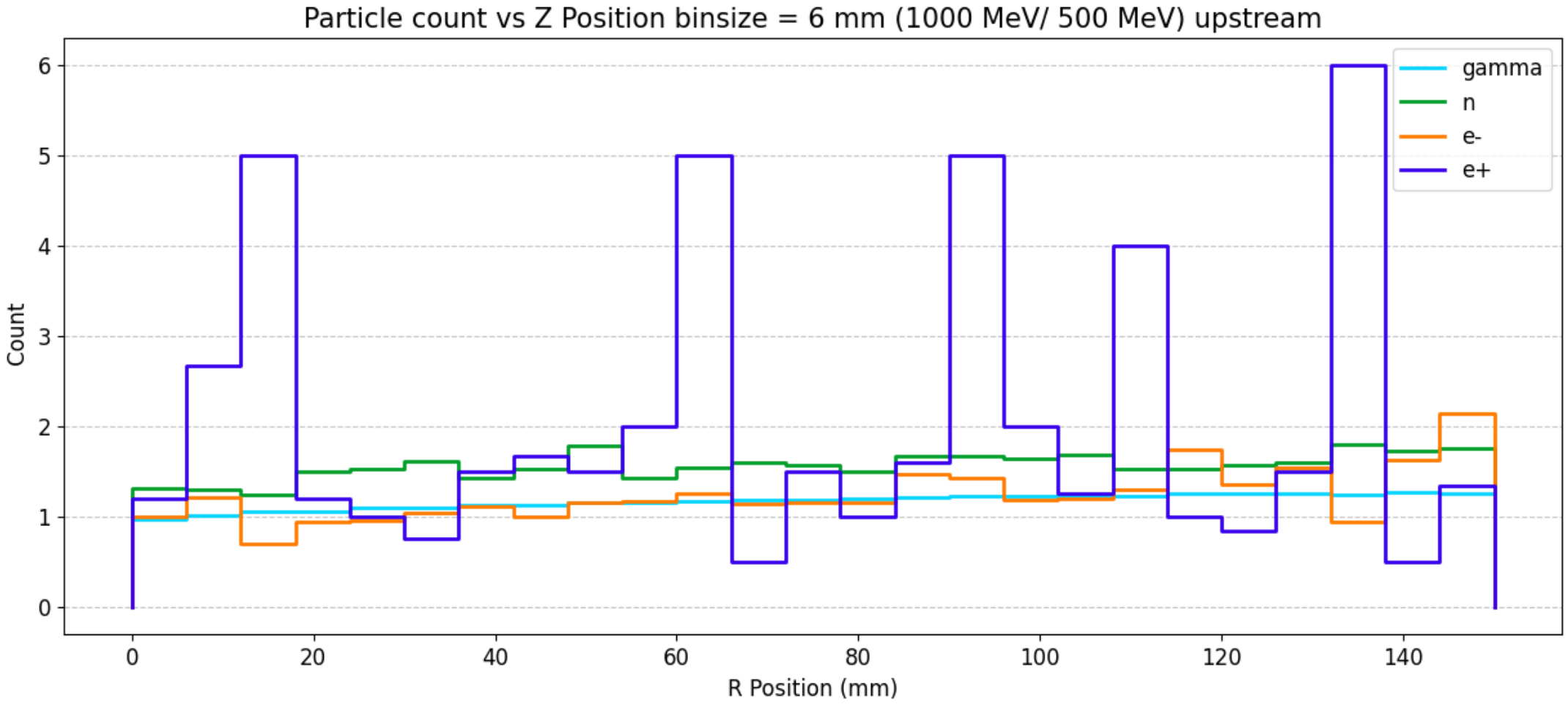
Δleakage difference (R)

(Upstream Detector)



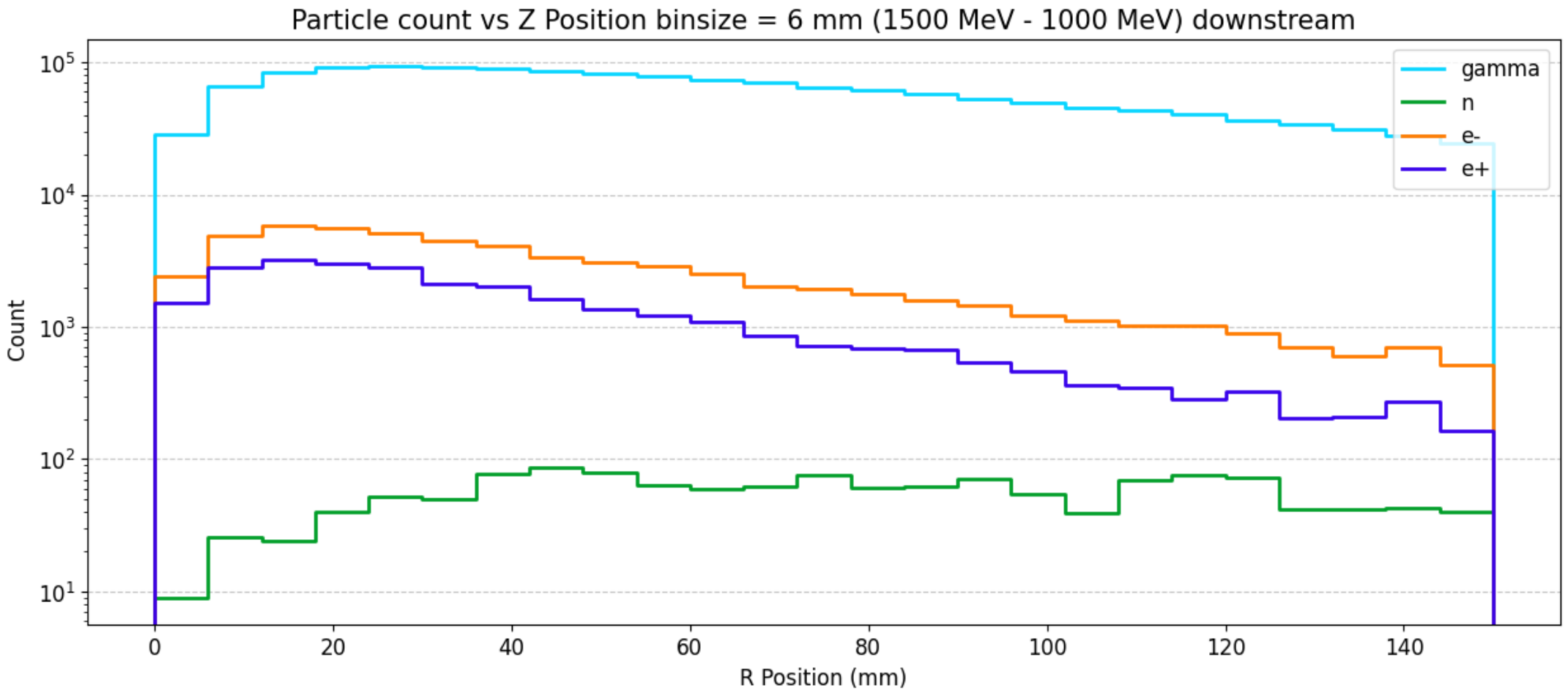
Δleakage ratio (R)

(Upstream Detector)



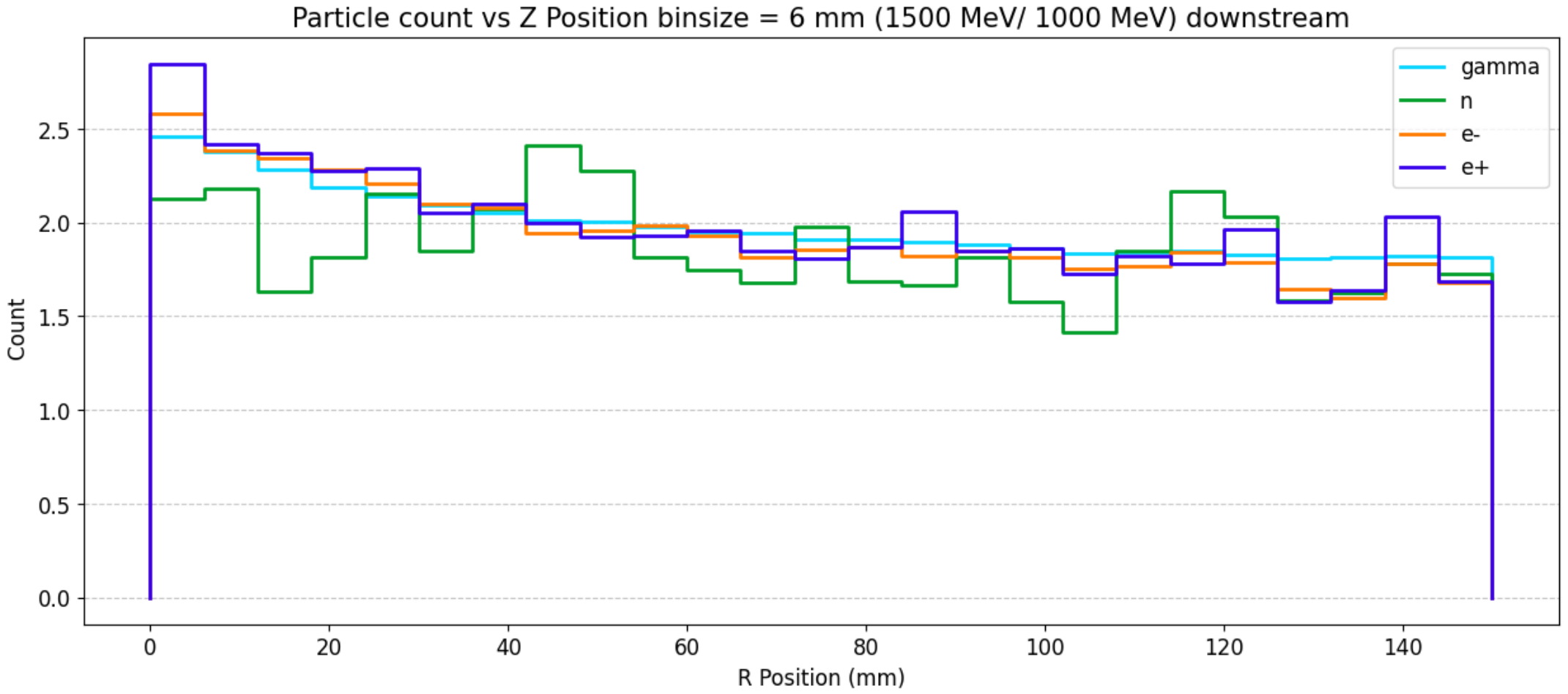
Δleakage difference (R)

(downstream Detector)



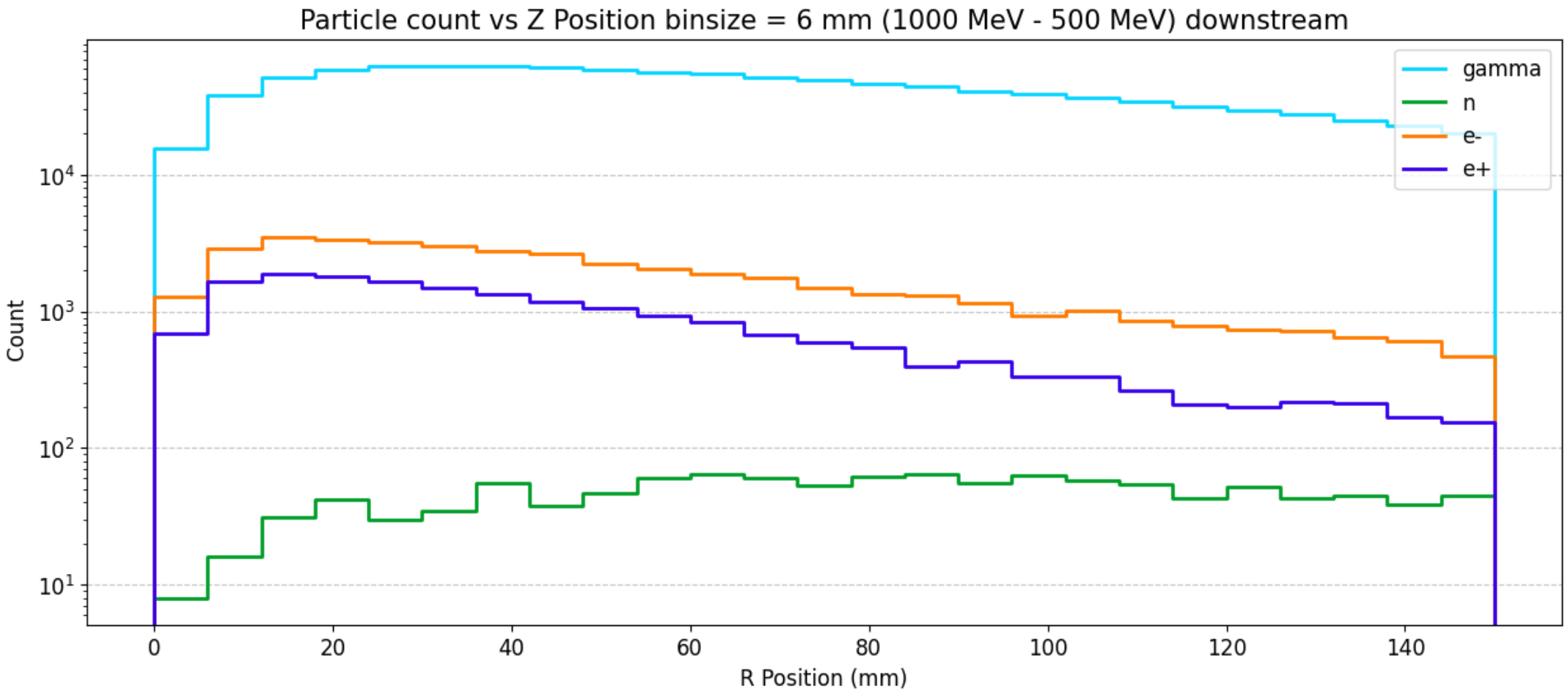
Δleakage ratio (R)

(downstream Detector)



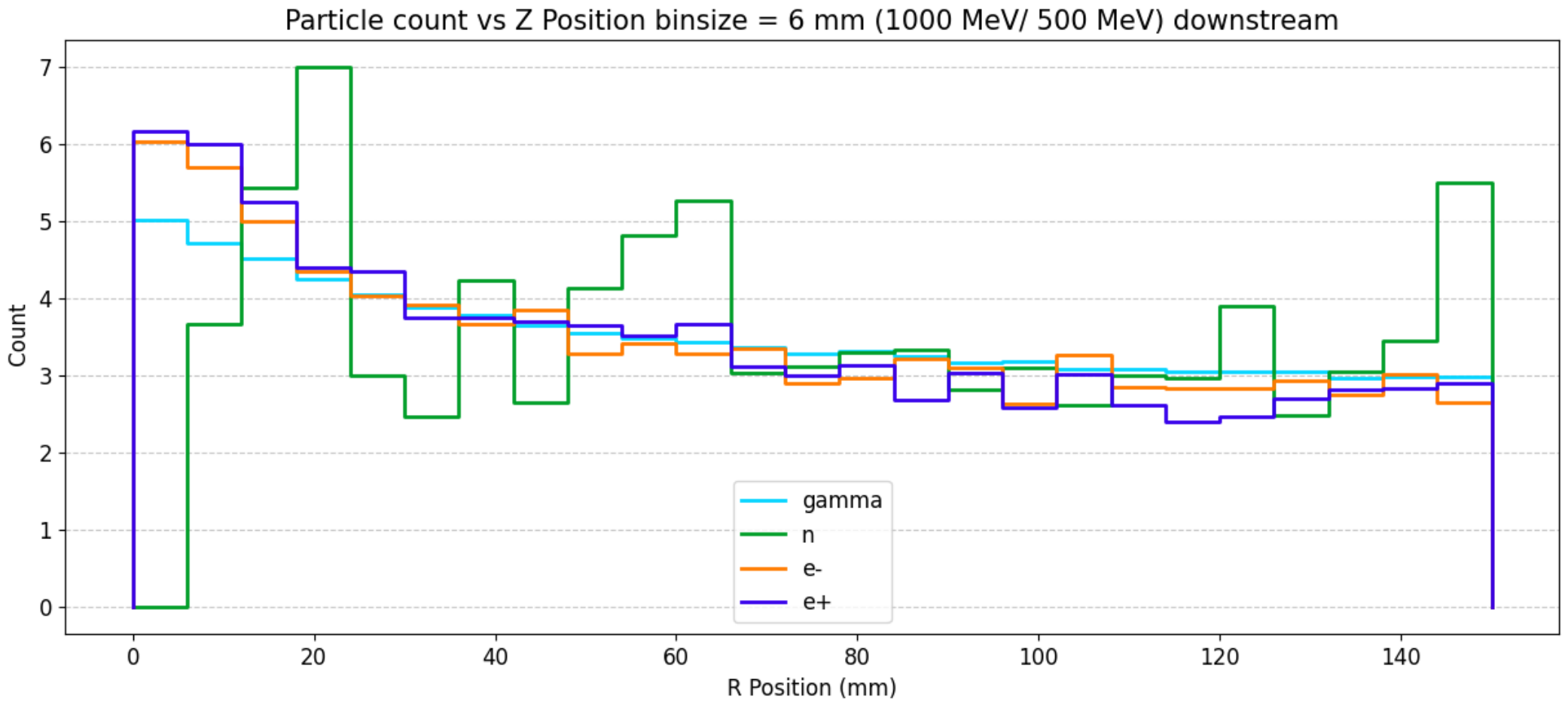
Δleakage difference (R)

(downstream Detector)



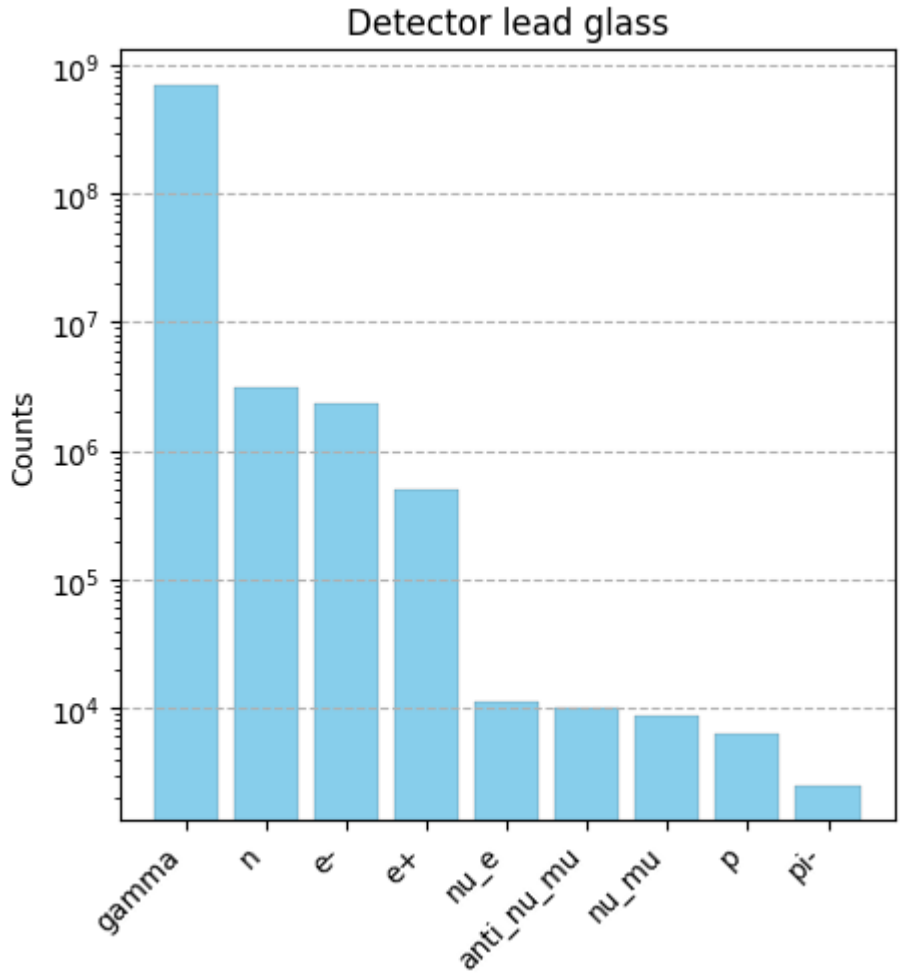
Δleakage ratio (R)

(downstream Detector)



Particles counts (again?!)

(counts in lead_glass solid angle)



Calculated with the simplified setup, which holds true with new simulation setup

···	Name	Lead Glass	Light Guide	PMT
0	anti_nu_e	9.10e+01	0.00e+00	0.00e+00
1	anti_nu_mu	1.41e+04	5.34e+02	2.81e+02
2	e+	6.54e+05	7.34e+04	8.44e+04
3	e-	4.27e+06	3.54e+05	3.88e+05
4	gamma	8.68e+08	4.10e+07	4.07e+07
5	mu+	0.00e+00	0.00e+00	0.00e+00
6	mu-	4.50e+01	0.00e+00	0.00e+00
7	n	3.88e+06	1.60e+05	1.51e+05
8	nu_e	1.52e+04	3.45e+02	2.34e+02
9	nu_mu	1.46e+04	2.82e+02	2.57e+02
10	p	5.78e+03	1.88e+02	1.17e+02
11	pi+	5.46e+03	3.10e+01	1.17e+02
12	pi-	3.73e+03	3.10e+01	7.00e+01

Tile #9

(particles count)