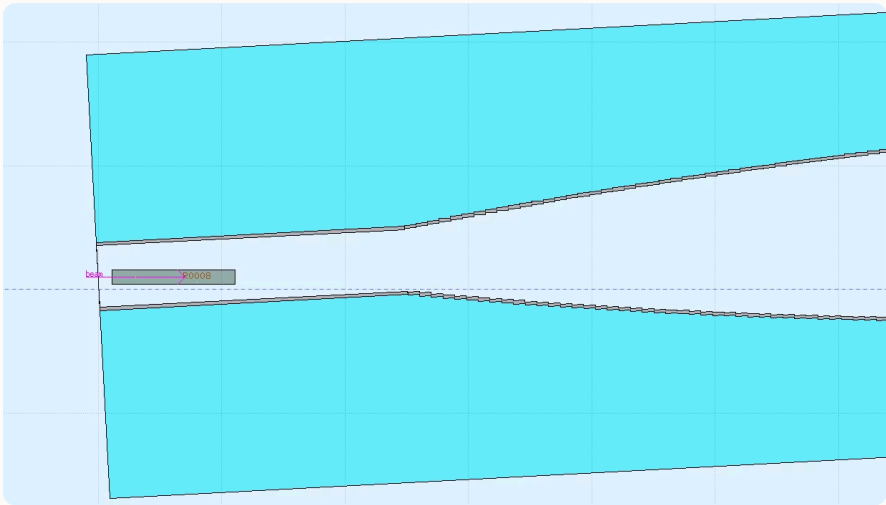


Proton beam @ 1.3GeV



1. 10k primaries do not produce any useful pions.

Energy cut applied: $0.0 \text{ GeV} < E < 0.4 \text{ GeV}$

	species	PType	count
0	mu+	10	0
1	mu-	11	0
2	pi+	13	10
3	pi-	14	6
4	proton	1	4633

Offset-Induced dipole

1. **Shifted from elliptical to circular horn geometry**

Replaced the elliptical horn with a circular conductor to remove quadrupole effects and isolate the offset-induced dipole bending.

2. **Introduced offset-induced dipole field inside the horn bore**

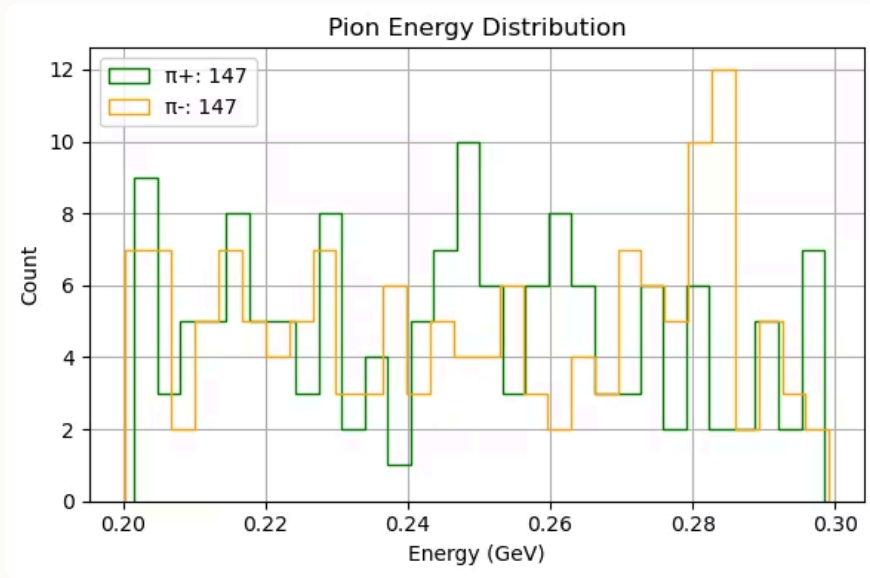
A conductor-center offset creates a dipole field in the normally field-free bore, allowing the study to test dipole-assisted 3° bending.

$$field : B_y = \frac{\mu_0 I}{2\pi} \frac{\delta}{R_{out}^2 - R_{in}^2}$$

3. **Made tilt angle and dipole offset independent optimizer parameters**

The optimizer now scans tilt angle and offset separately, enabling clean comparison of tilt-only, offset-only, and combined bending effects.

Plots



1. Equal number of $\pi^\pm$ seems a bit suspicious, since the horn acts as a defocusing element for π^-
2. Will continue working on this, to get a sureshot figure.