Light-mass FCP acceptance

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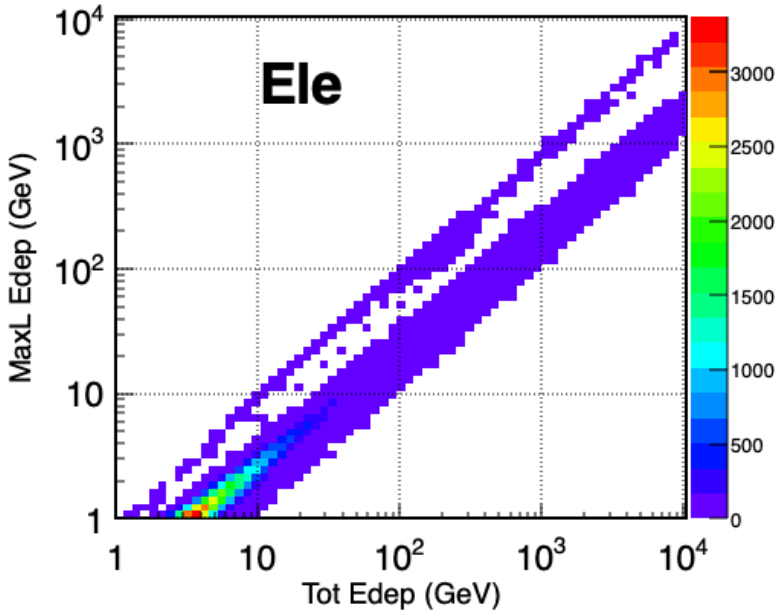
Outline

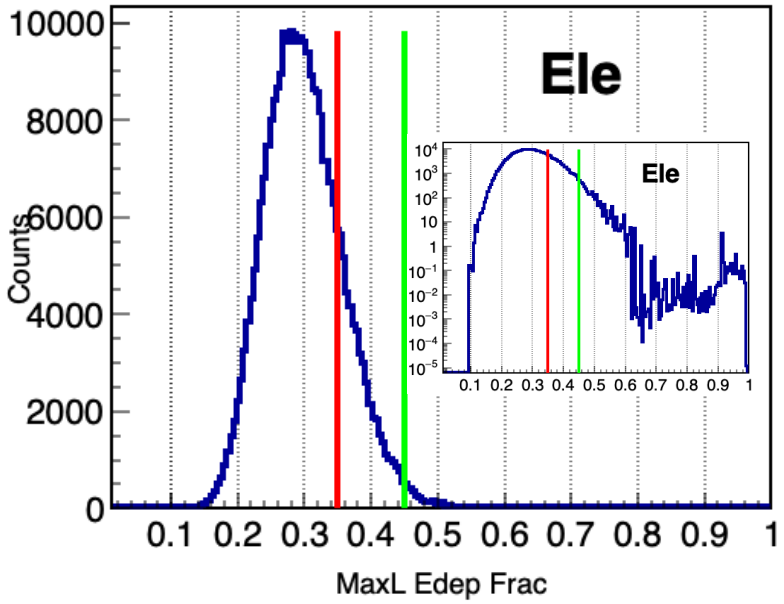
- Electron selections
  - Inclined events
  - Hadronic events
- Adjust selections

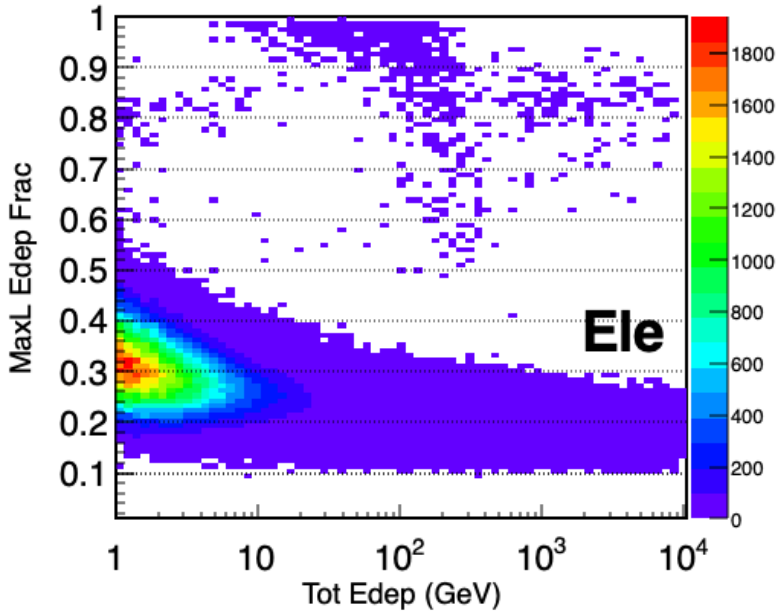
Inclined events

Max Layer Edep / Total Edep

- The judgement of inclined event should estimate. (Now it is 0.35)
- Setting a loose value to remain more events.

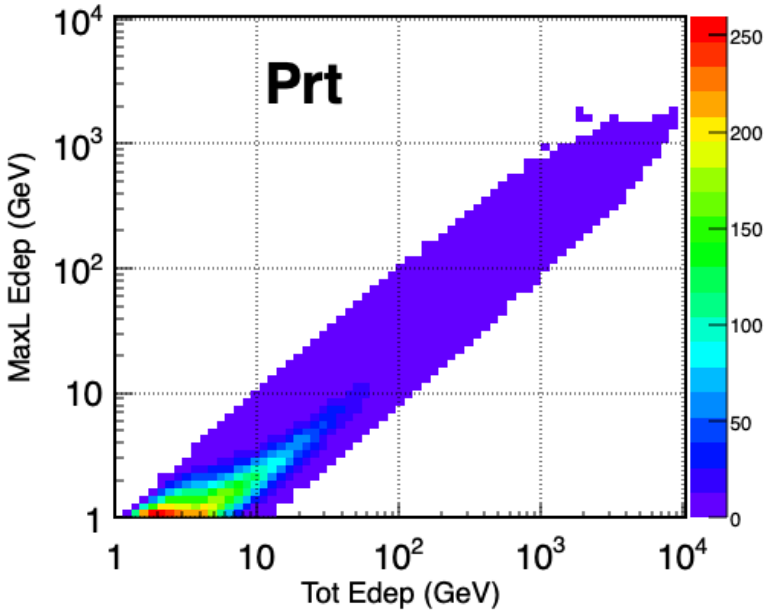


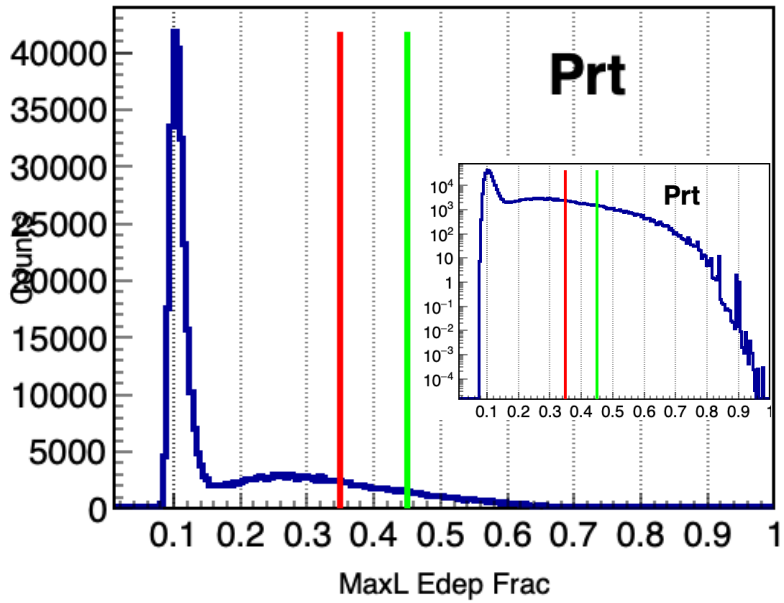


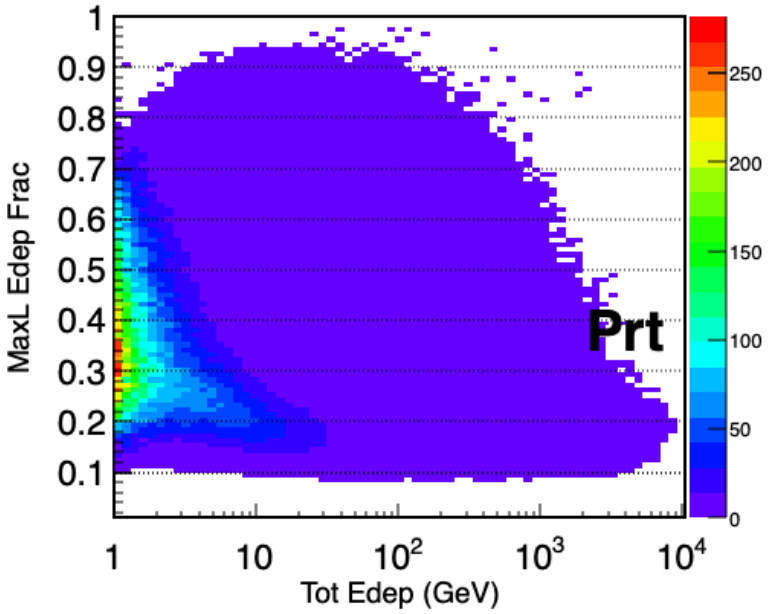


Inclined events

Max Layer Edep / Total Edep



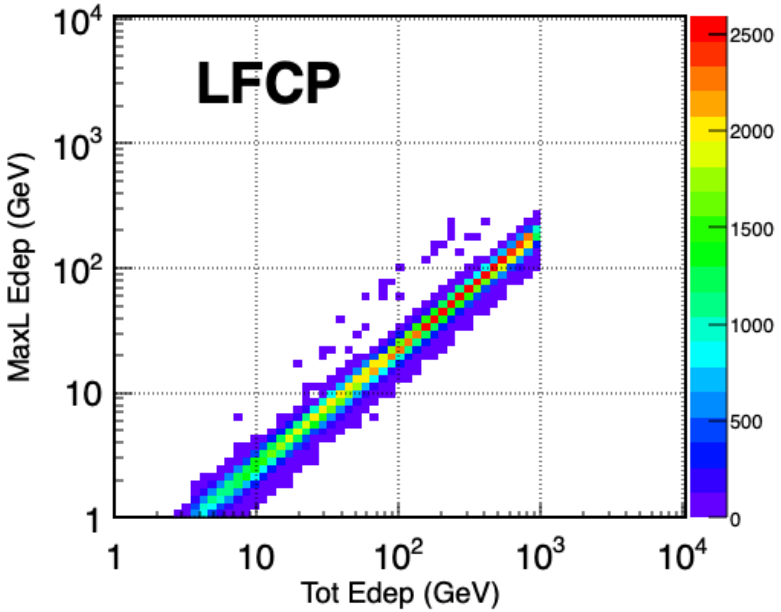


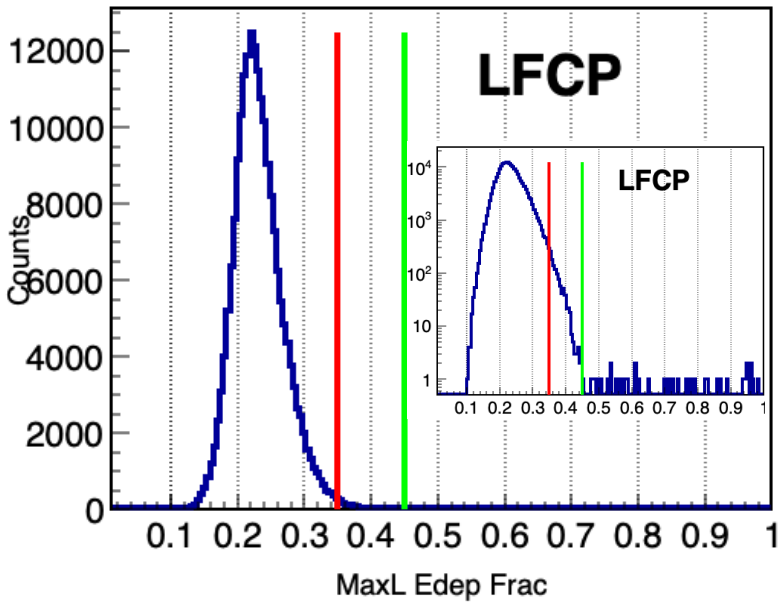


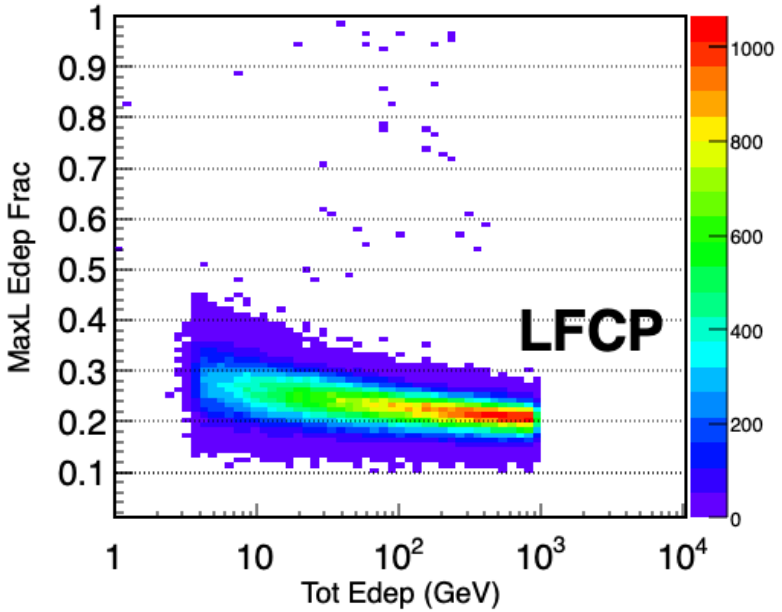
Inclined events

Max Layer Edep / Total Edep

No reweight

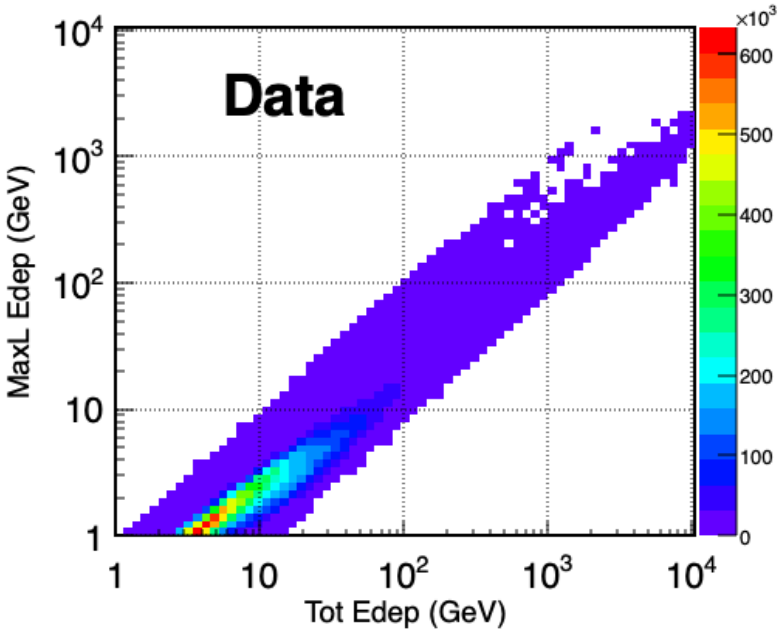


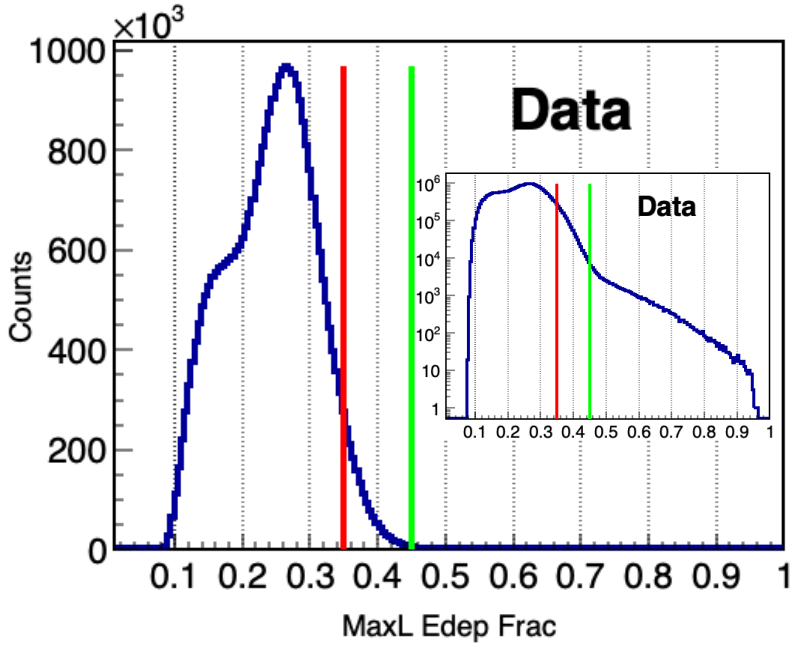


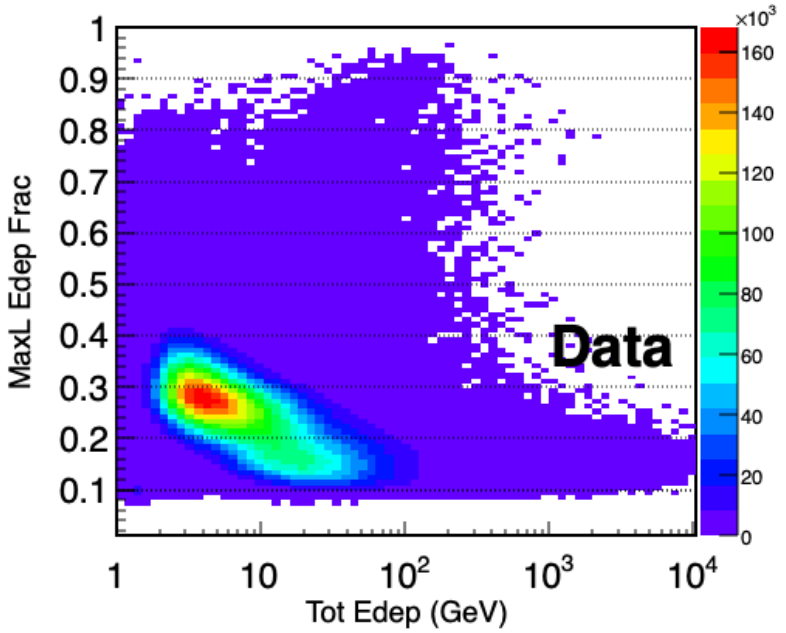


Inclined events

Max Layer Edep / Total Edep



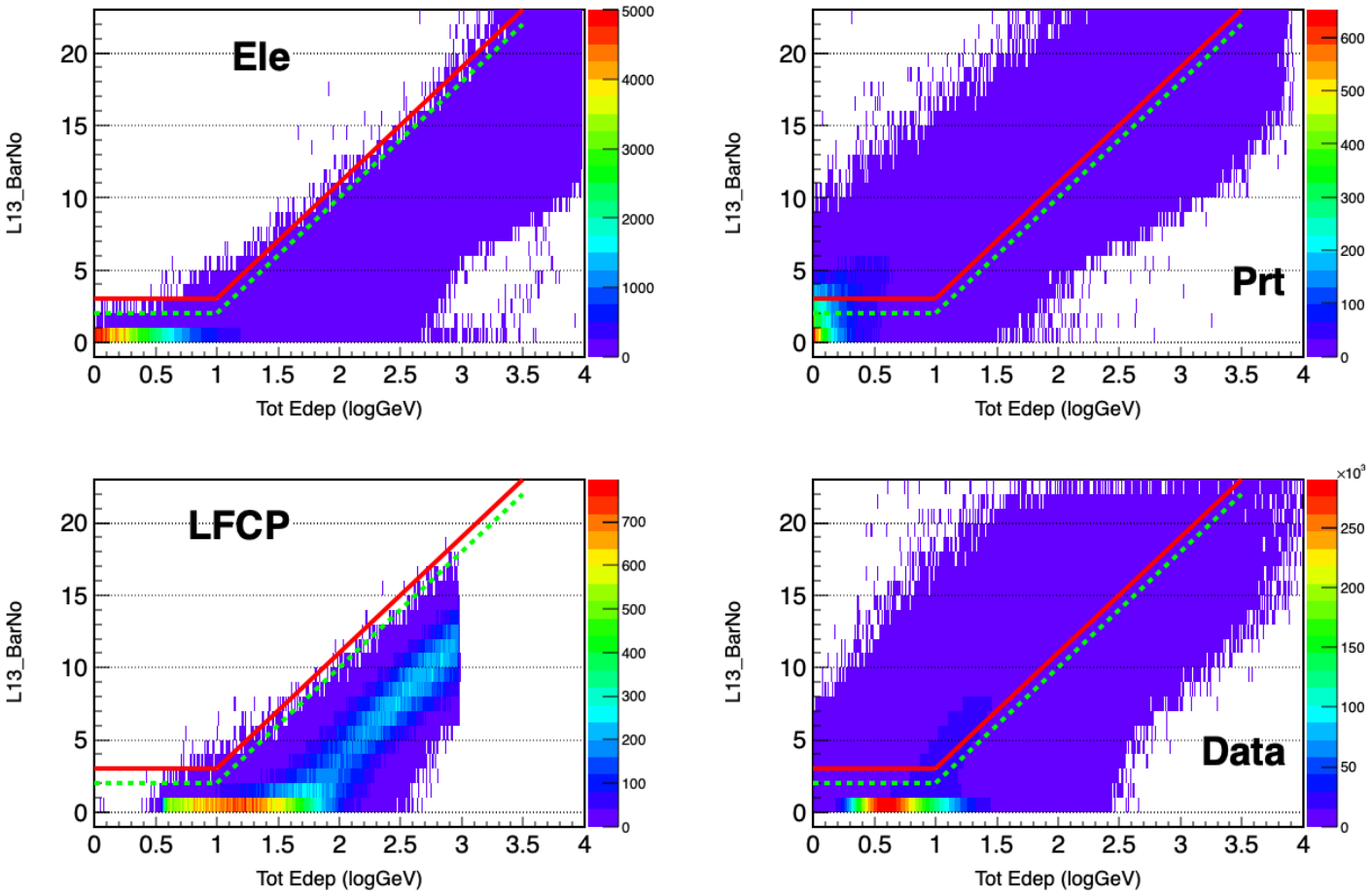




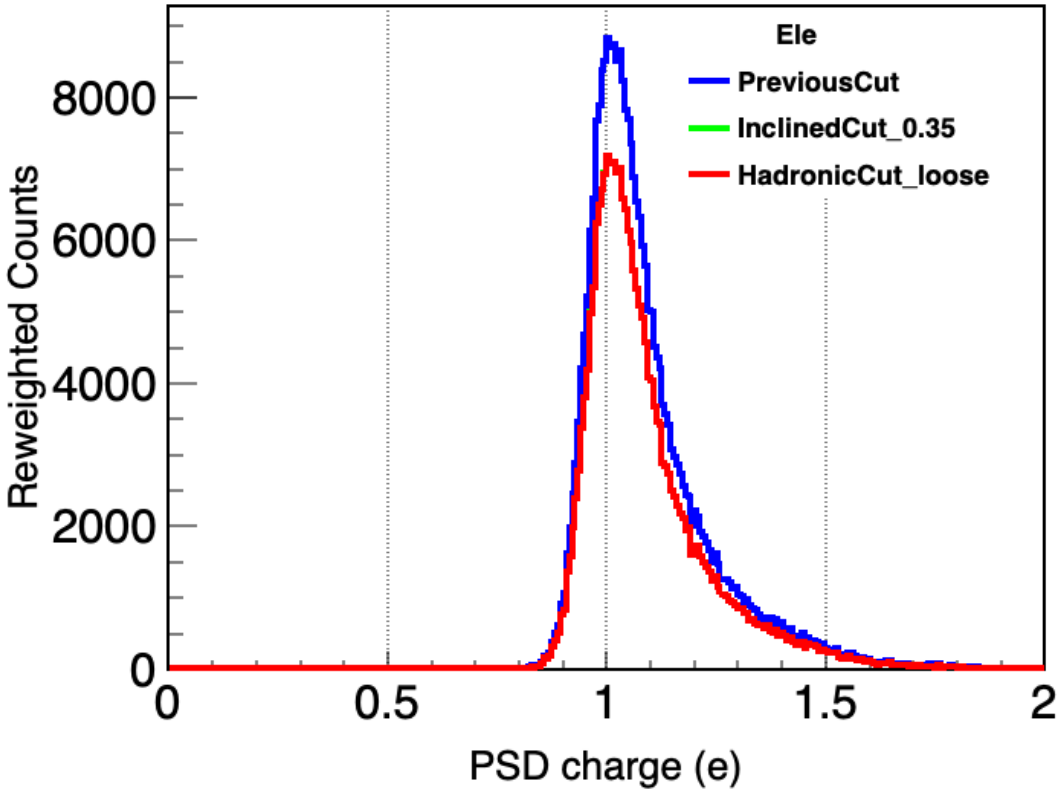
Hadronic events

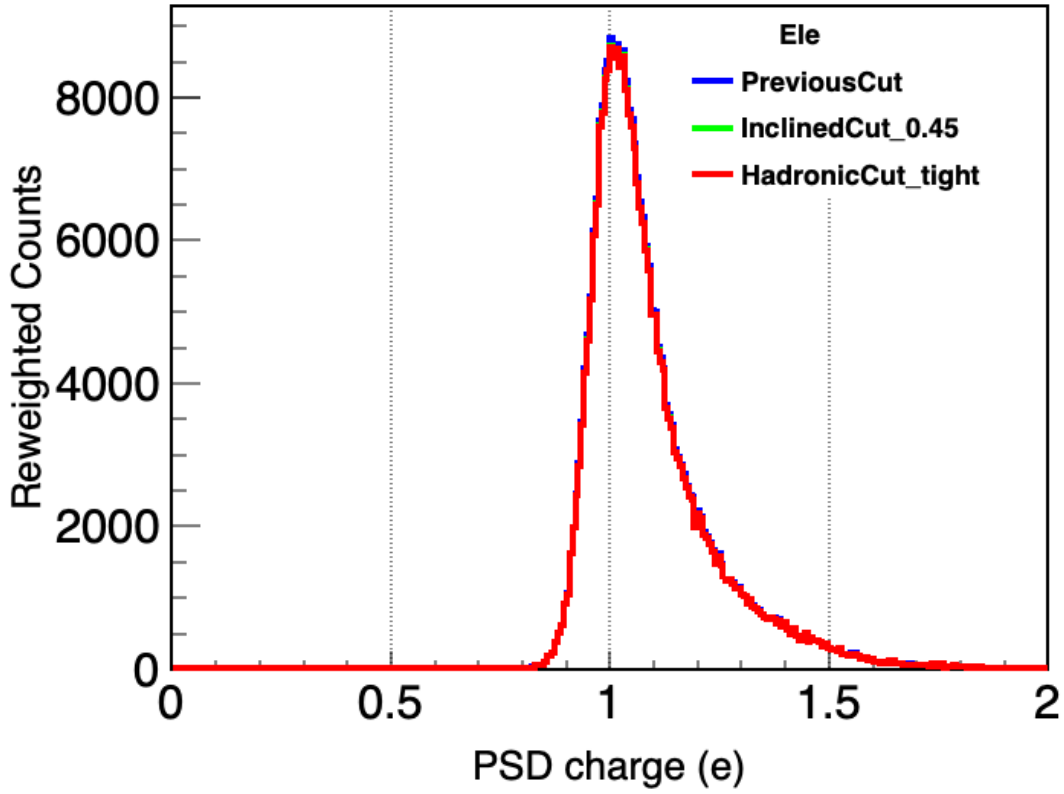
Red: 8 * log(edep) - 5
Green: 8 * log(edep) - 6

- Bar number of Edep > 10 MeV in last layer.
- Setting a tighter value to remove more hadronic events



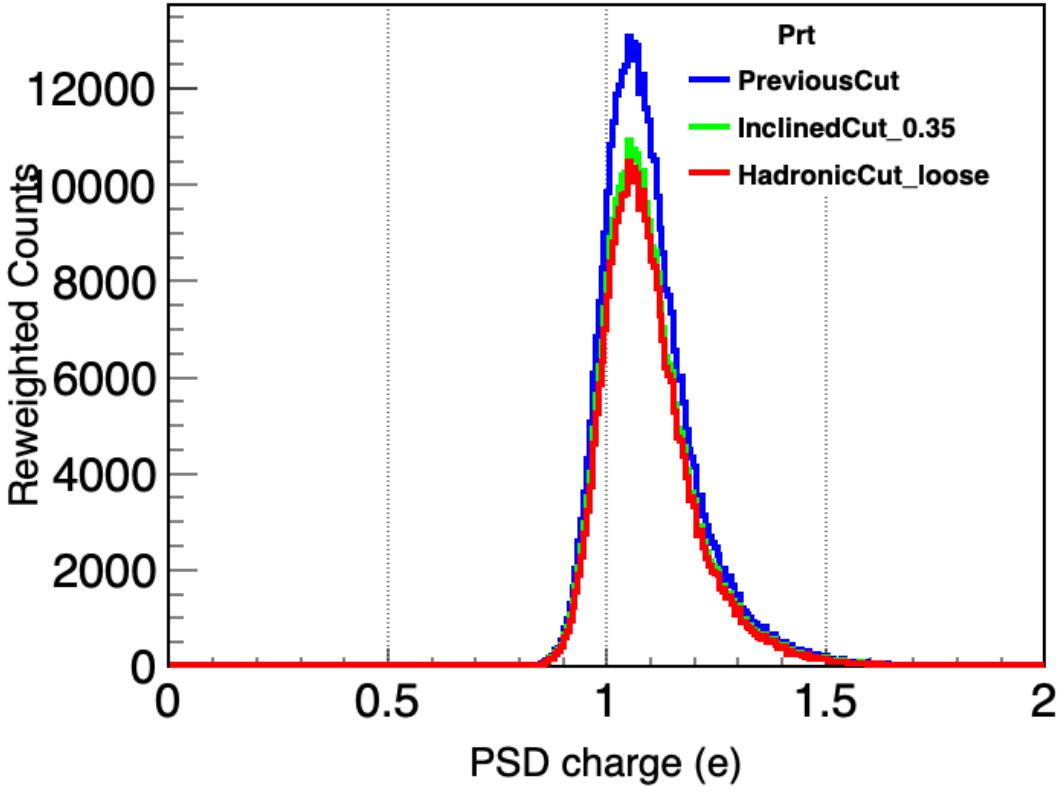
Adjust selections

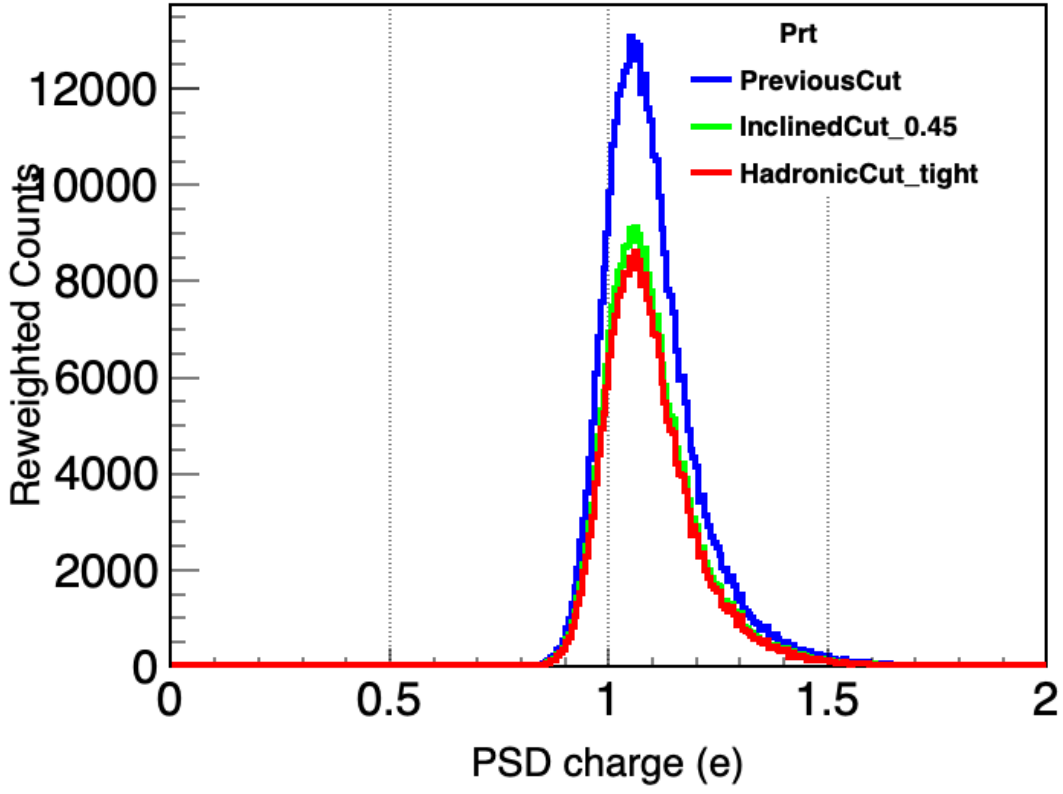




	Relative efficiency(%)		Relative efficiency(%)
Inclined 0.35	98.44	Inclined 0.45	99.88
Hadronic loose	99.97	Hadronic tight	99.91
Total	98.41	Total	99.79

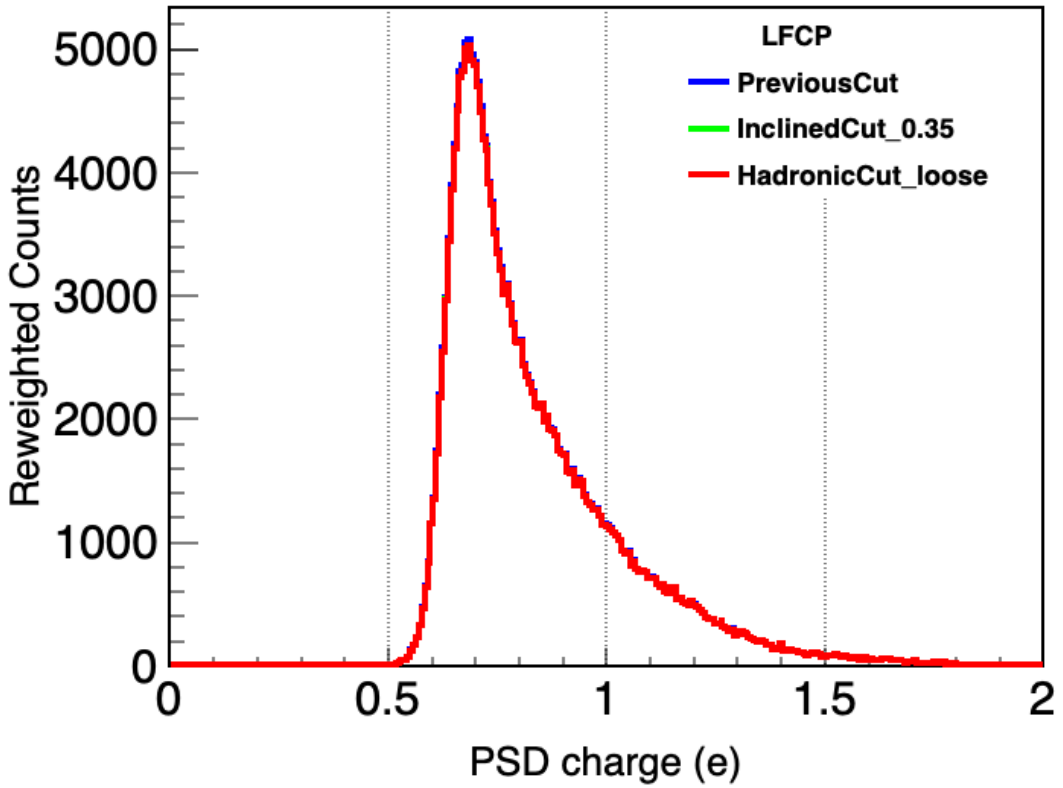
Adjust selections

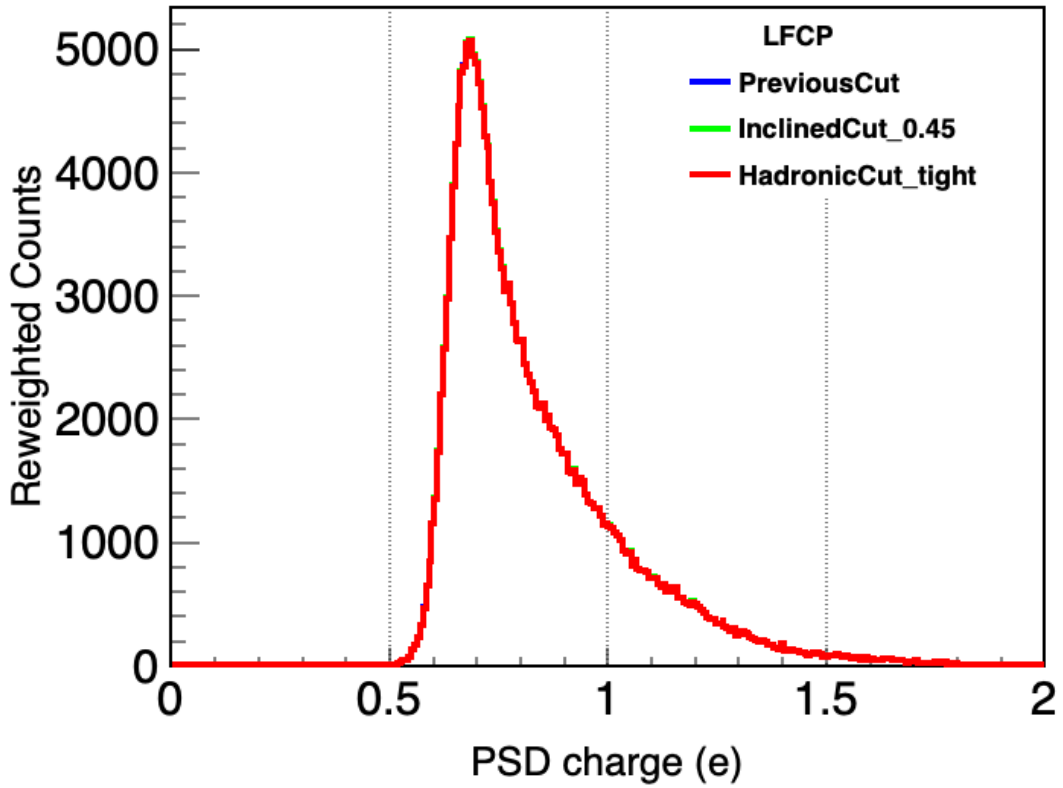




	Relative efficiency(%)		Relative efficiency(%)
Inclined 0.35	86.76	Inclined 0.45	75.37
Hadronic loose	60.90	Hadronic tight	54.55
Total	52.83	Total	41.11

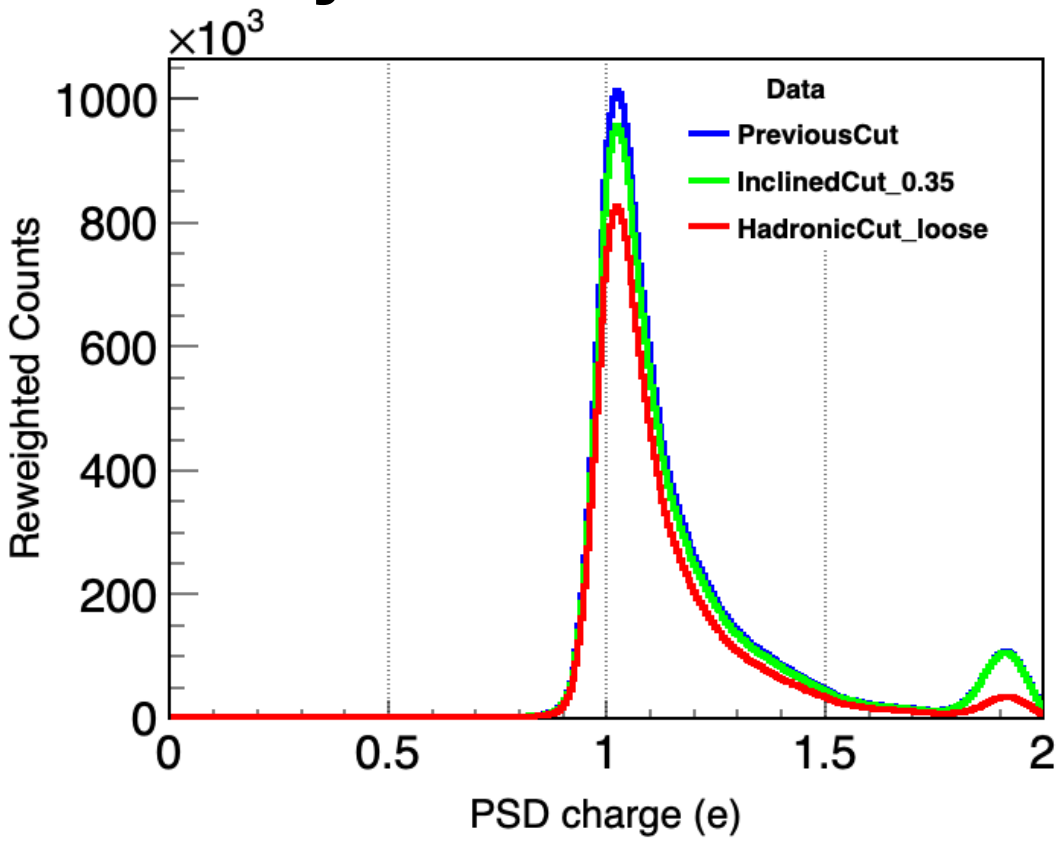
Adjust selections

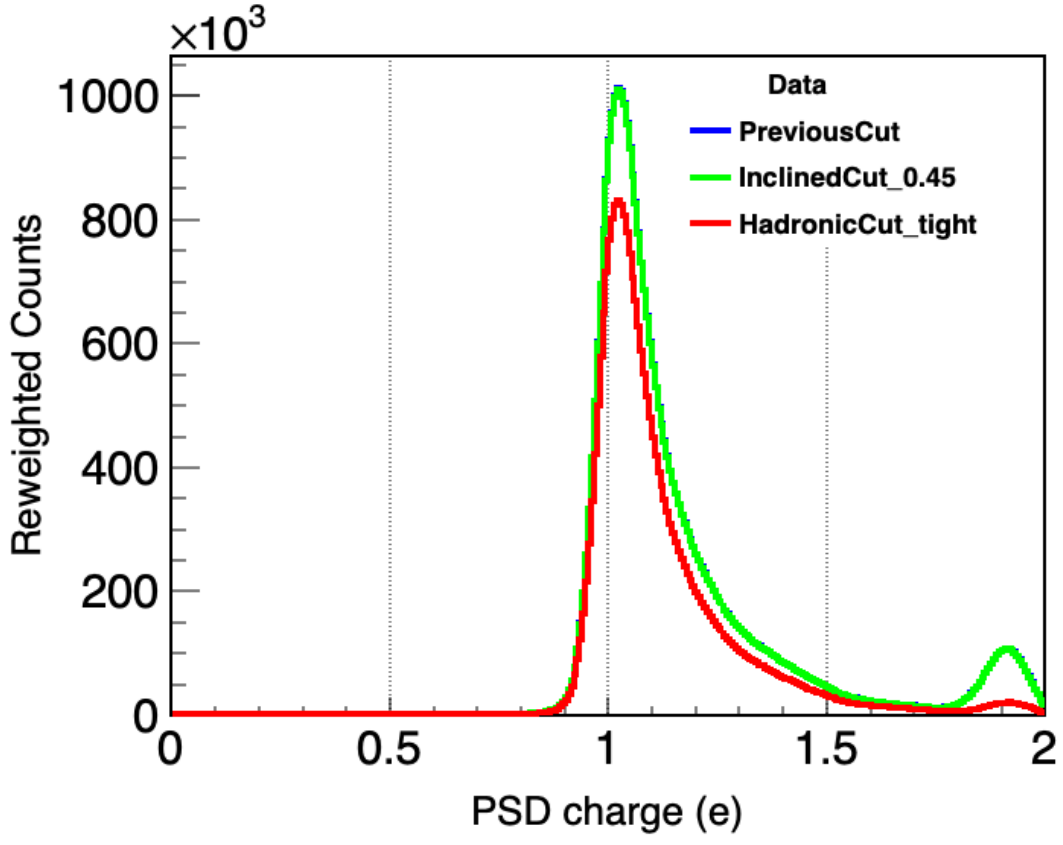




	Relative efficiency(%)		Relative efficiency(%)
Inclined 0.35	99.35	Inclined 0.45	99.98
Hadronic loose	99.99	Hadronic tight	99.86
Total	99.34	Total	99.84

Adjust selections





	Relative efficiency(%)		Relative efficiency(%)
Inclined 0.35	94.78	Inclined 0.45	99.73
Hadronic loose	80.69	Hadronic tight	75.57
Total	76.48	Total	75.36

Summary

- Crosschecked the electron selections and evaluated the criteria.
- Adjusted new criteria to the selections and compared with electron ones.
- New criteria will exclude more proton events and remain more electron and LFCP events

Comparison of macro files

```
 1 /control/verbose 2
 2 /run/verbose 1
 3 /tracking/storeTrajectory 2
 4 #/tracking/verbose 1
 5
 6 /gun/sourceGen 1
 7 /gun/vertexRadius 1.38 m
 8 /gun/sourceType 11
 9
10 /gps/particle lfcp
11 # 1/E spectrum
12 /gun/spectrumType 2
13
14 /gps/ene/min 4 GeV
15 /gps/ene/max 1000 GeV
~
```

```
 1 /gun/sourceGen 1
 2 /gun/sourceType 11
 3 #/gps/particle e-
 4 /gps/particle lfcp
 5 #/gps/particle lightfcp
 6 /gps/pos/type Surface
 7 /gps/pos/shape Sphere
 8 /gps/pos/centre 0. 0. 0. cm
 9 /gps/pos/radius  138. cm
10 /gps/ang/type cos
11 /gps/ene/type Pow
12 /gps/ene/min  4.0 GeV
13 /gps/ene/max  1000. GeV
14 /gps/ene/alpha -1.0
~
~
```

Next step

- Add selections in BGO
- Calculate signal region in energy ranges

Next step