Electron Trigger Curve Updates
GEMC SIDIS Configuration

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Previous Issue

SIDIS electron trigger

FAEC electron trigger

Radius(cm)	P Threshold (GeV)
92 - 105	5.0
105 - 115	4.0
115 - 130	3.0
130 - 150	2.0
150 - 200	1.0
200 – 230	2.0

flux_p at ECAL virtual plane

Radius(cm)	6+1 Cluster Threshold (MeV)
92 - 105	820.44
105 - 115	629.19
115 - 130	460.58
130 - 150	286.09
150 - 200	133.85
200 – 230	286.09

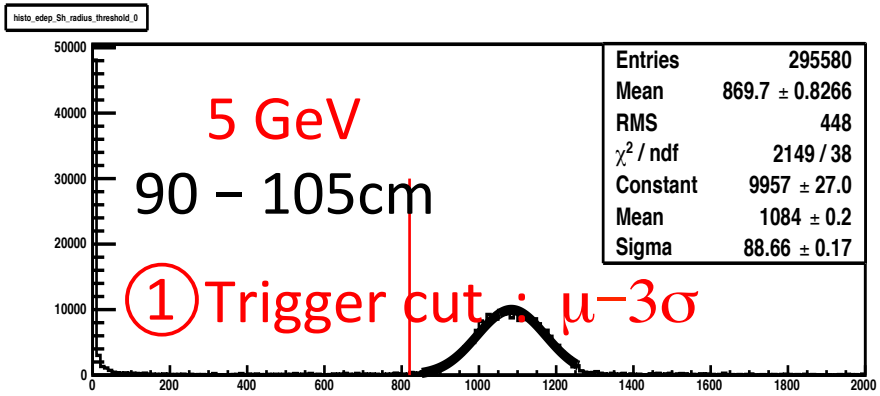
6p1 E_{dep} in ECAL for above flux_p

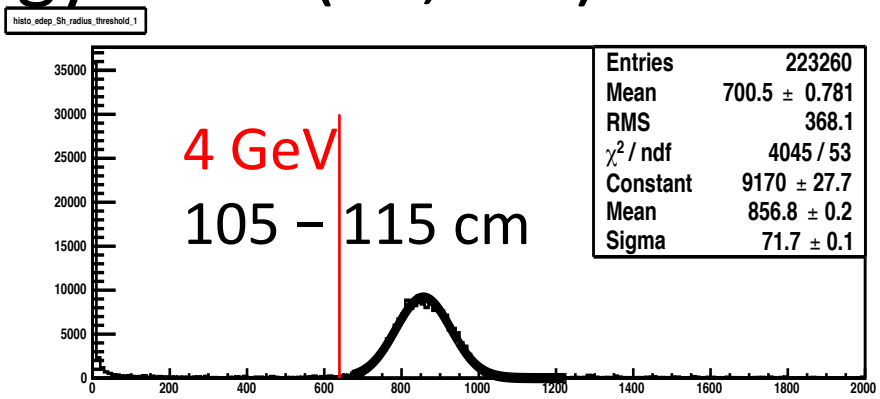
LAEC electron trigger

Radius(cm)	P Threshold (GeV)
90 - 105	3.0
105 - 115	3.0
115 - 137	3.0

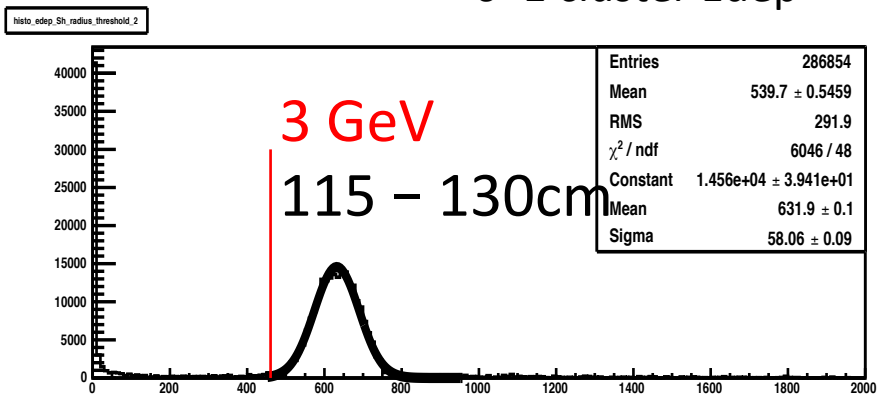
Radius(cm)	6+1 Cluster Threshold (MeV)
90 - 105	440.68
105 - 115	458.5
115 - 137	386.9

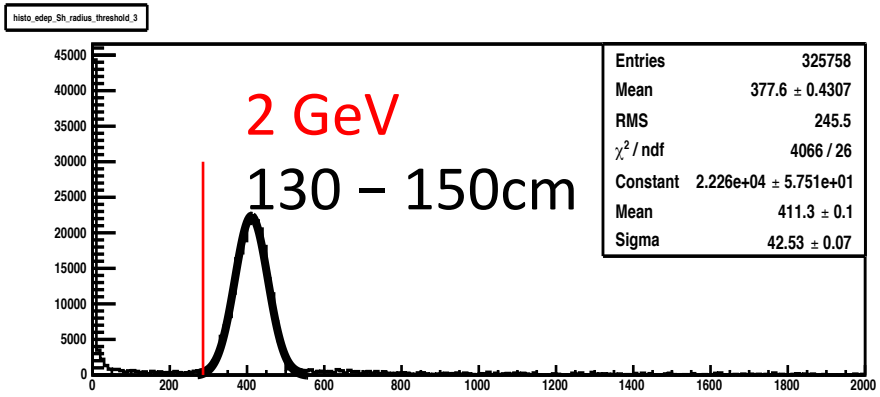
SIDIS 6+1 cluster energy FAEC (98,230)

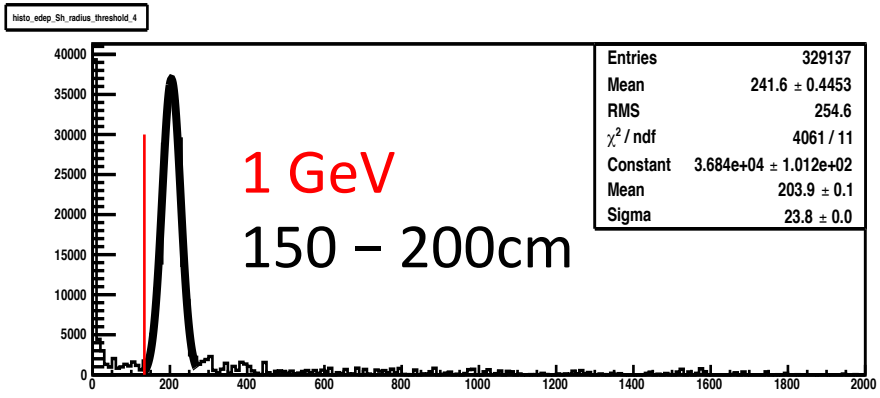


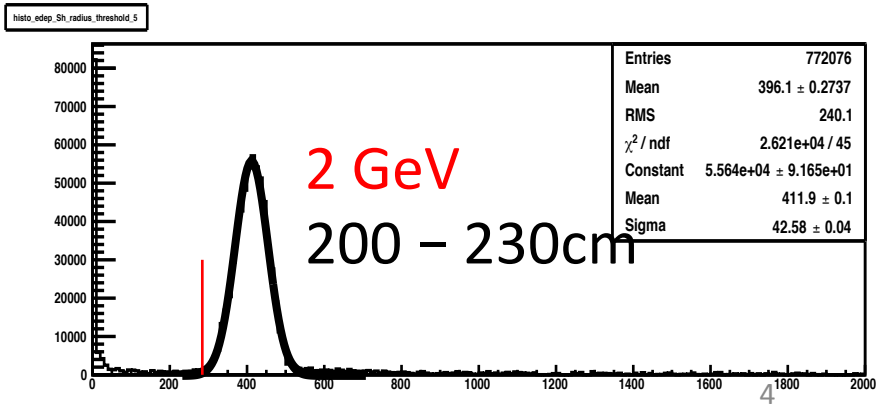


6+1 cluster Edep

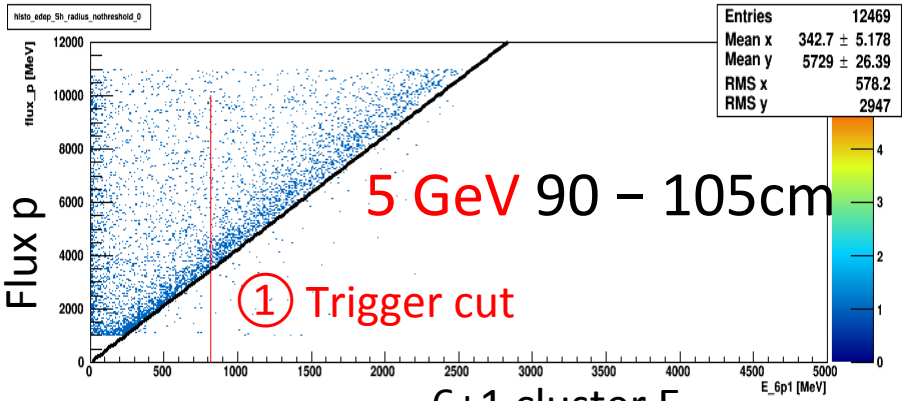






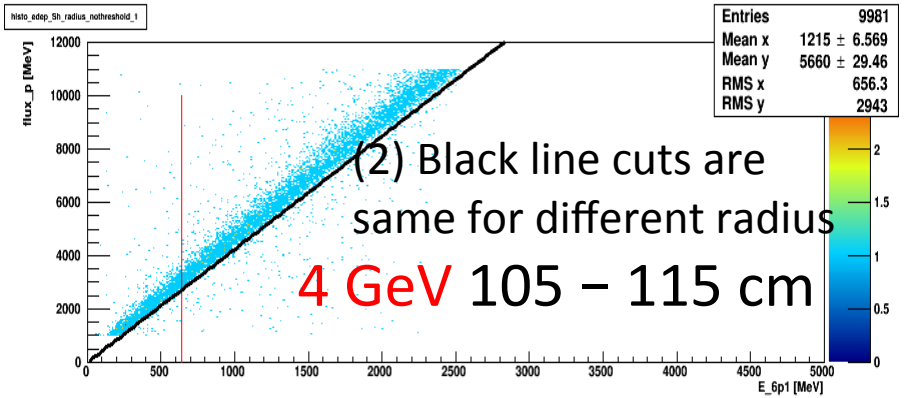


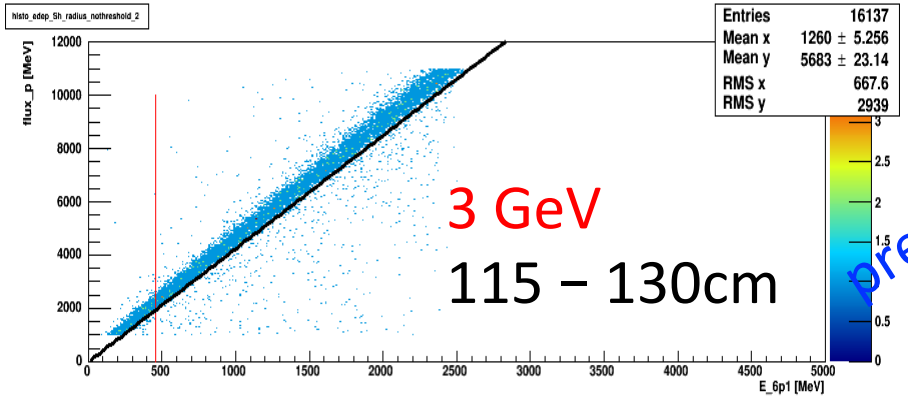
SIDIS 6+1 cluster energy FAEC full simulation



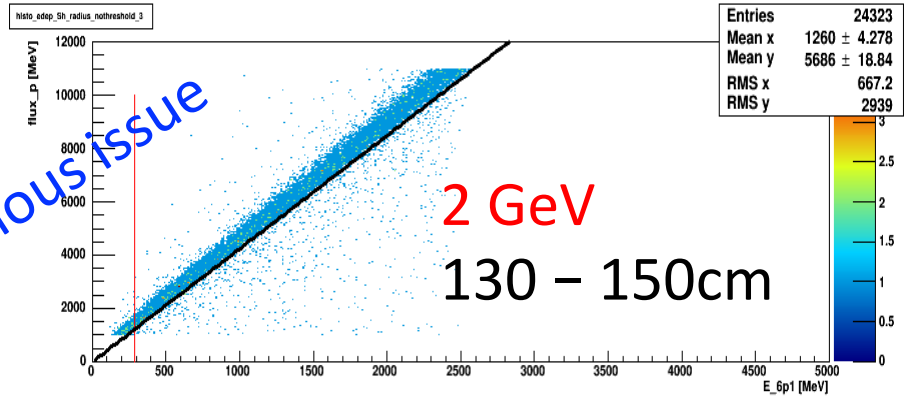
Flux p

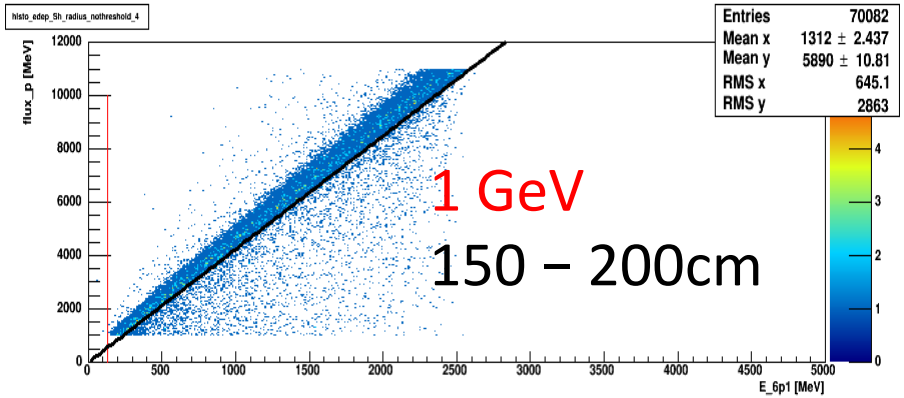
6+1 cluster E

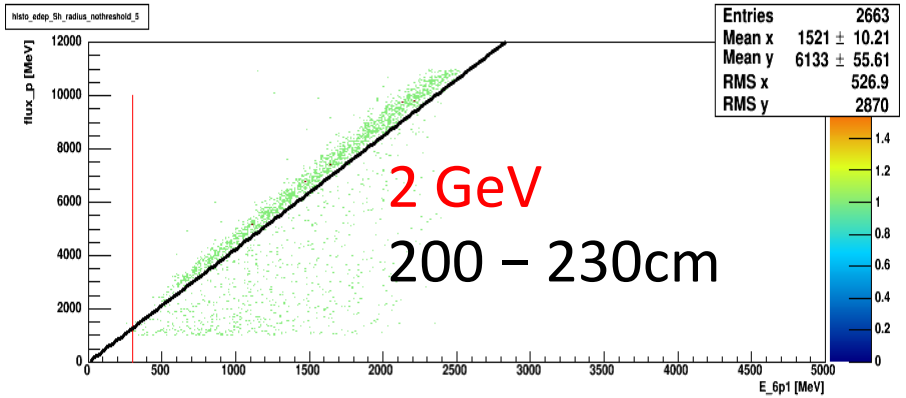


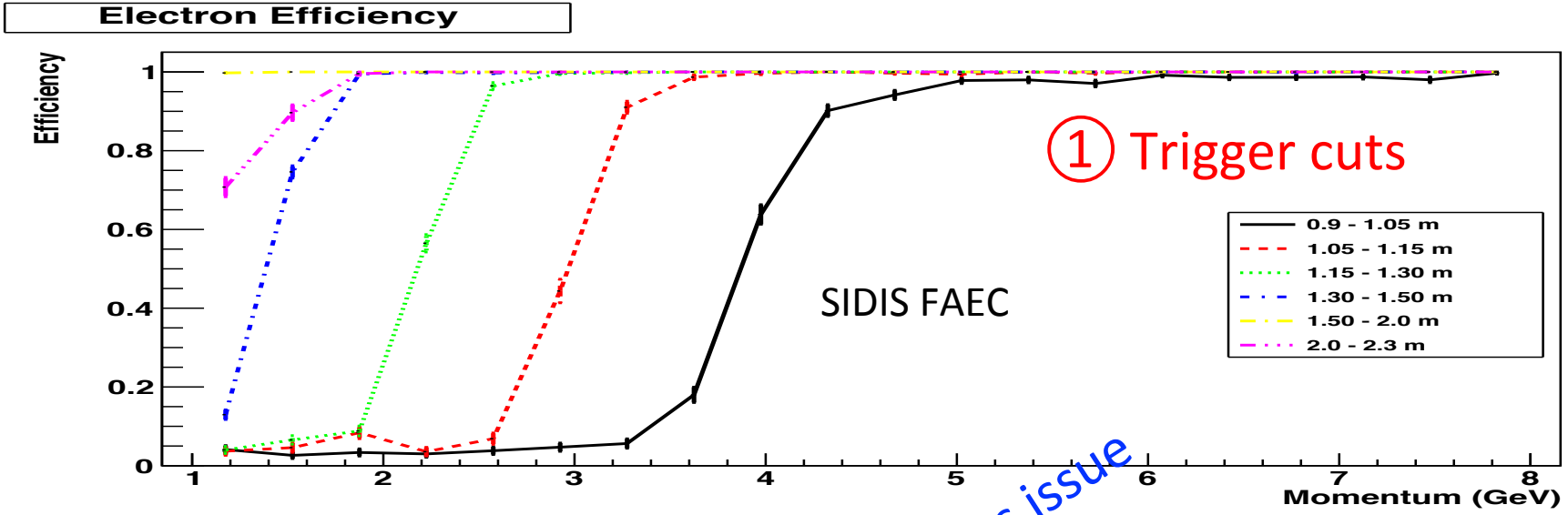


previous issue









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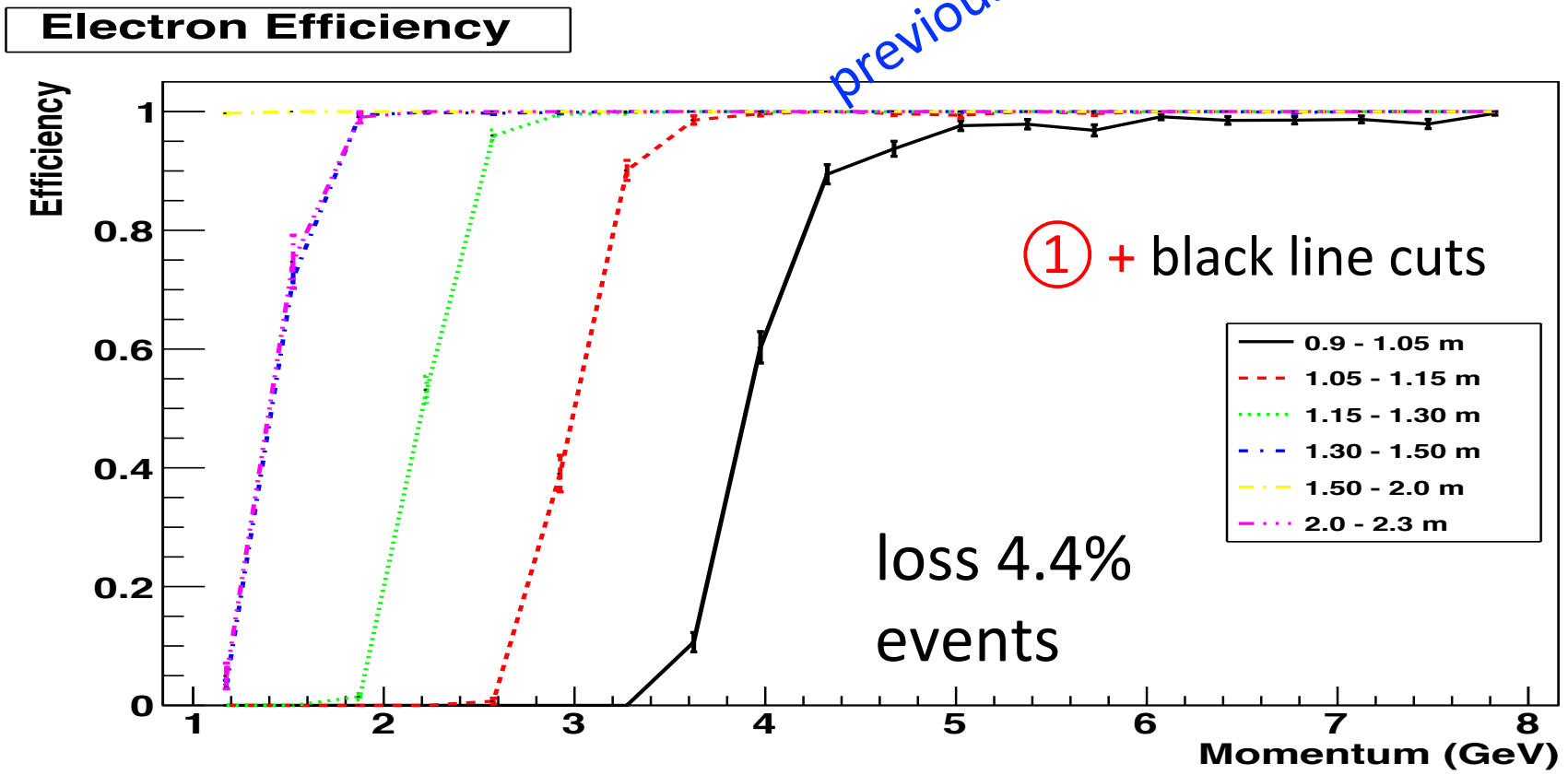
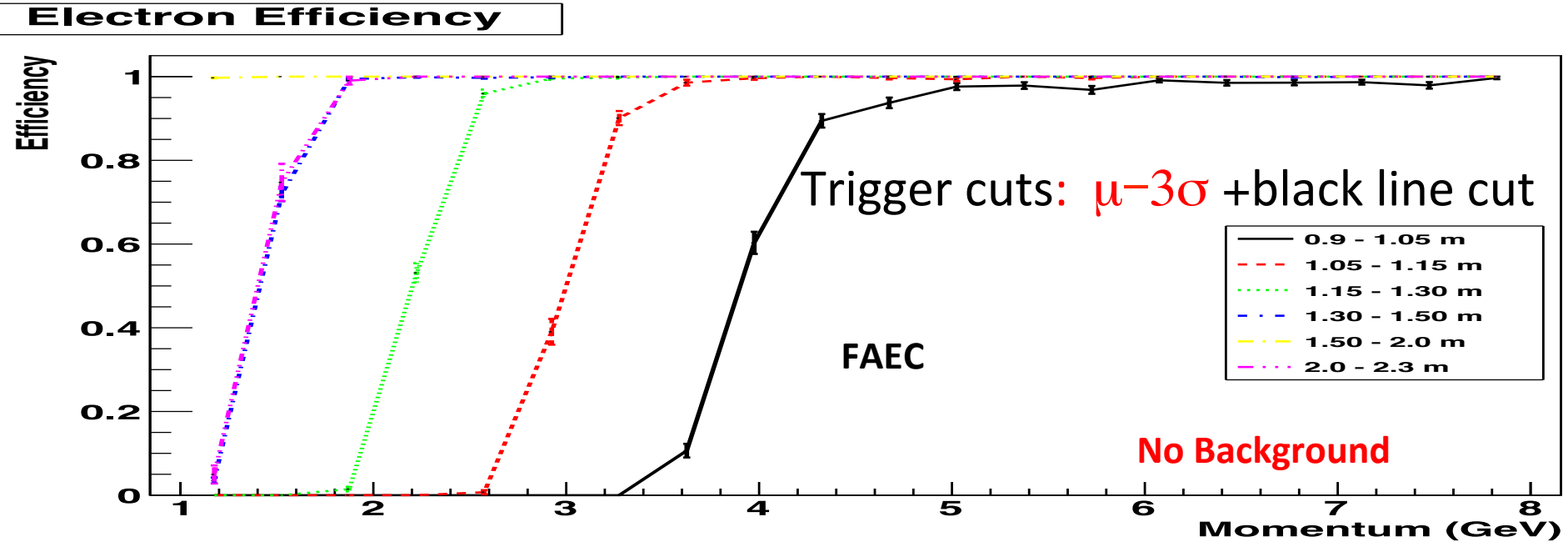
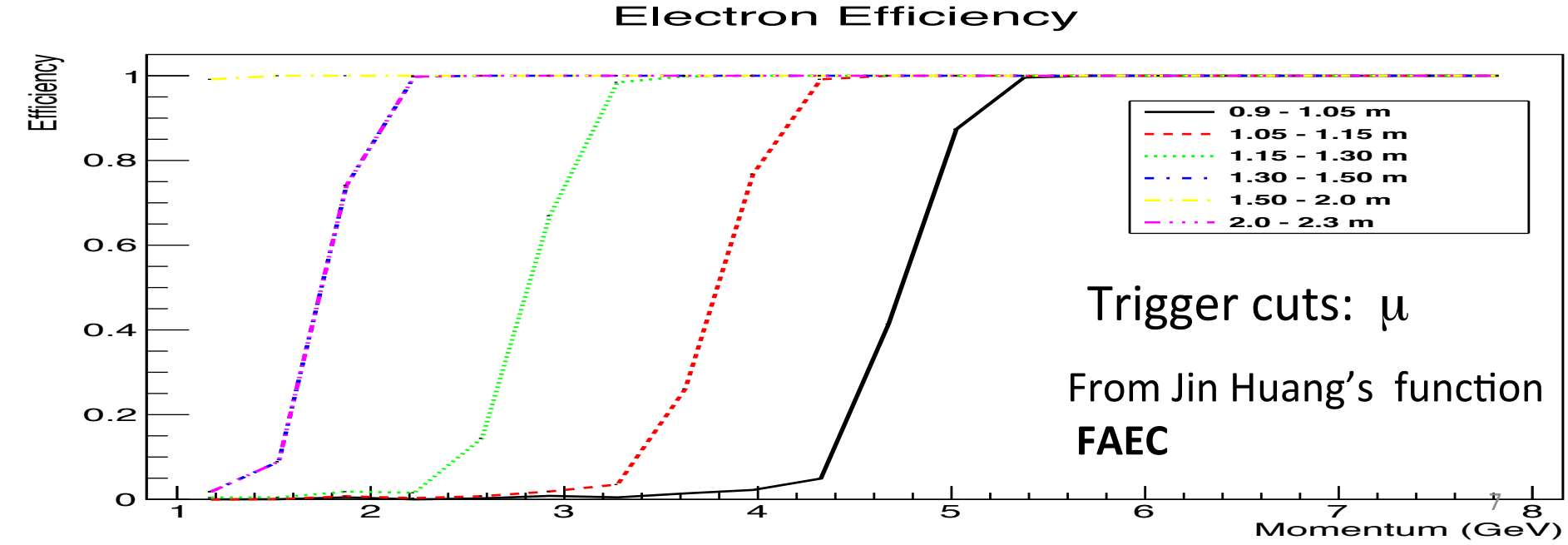
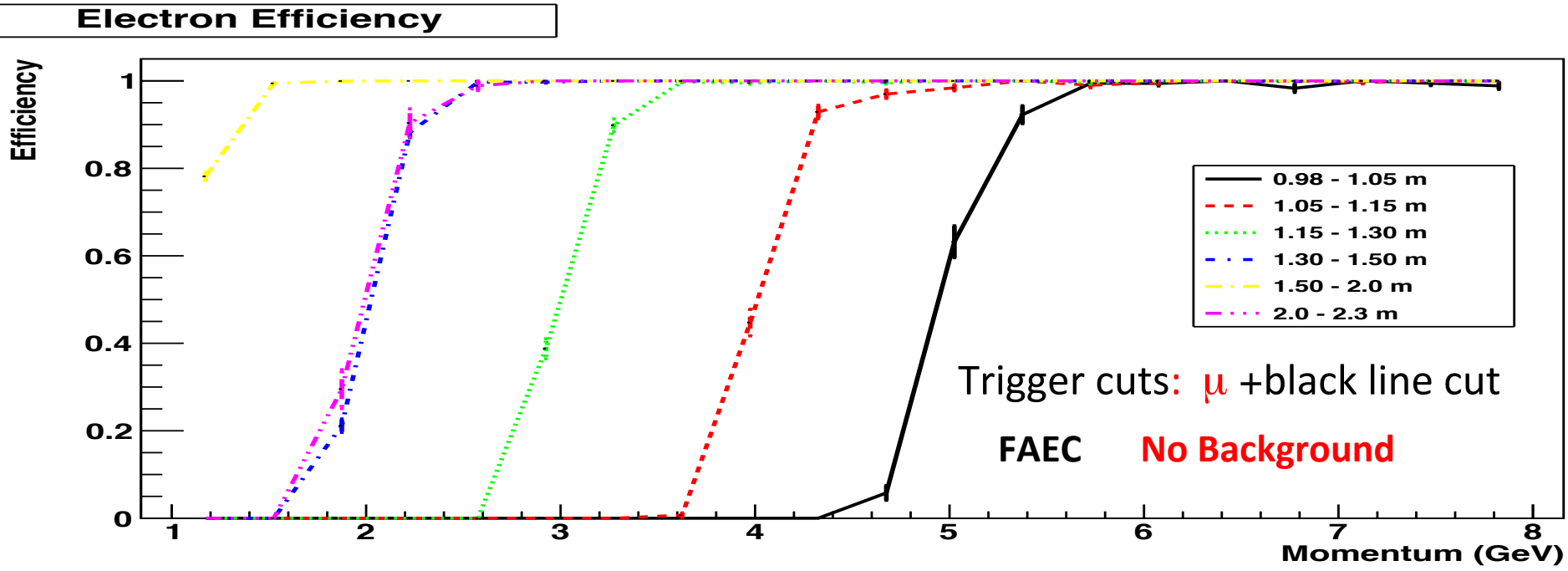


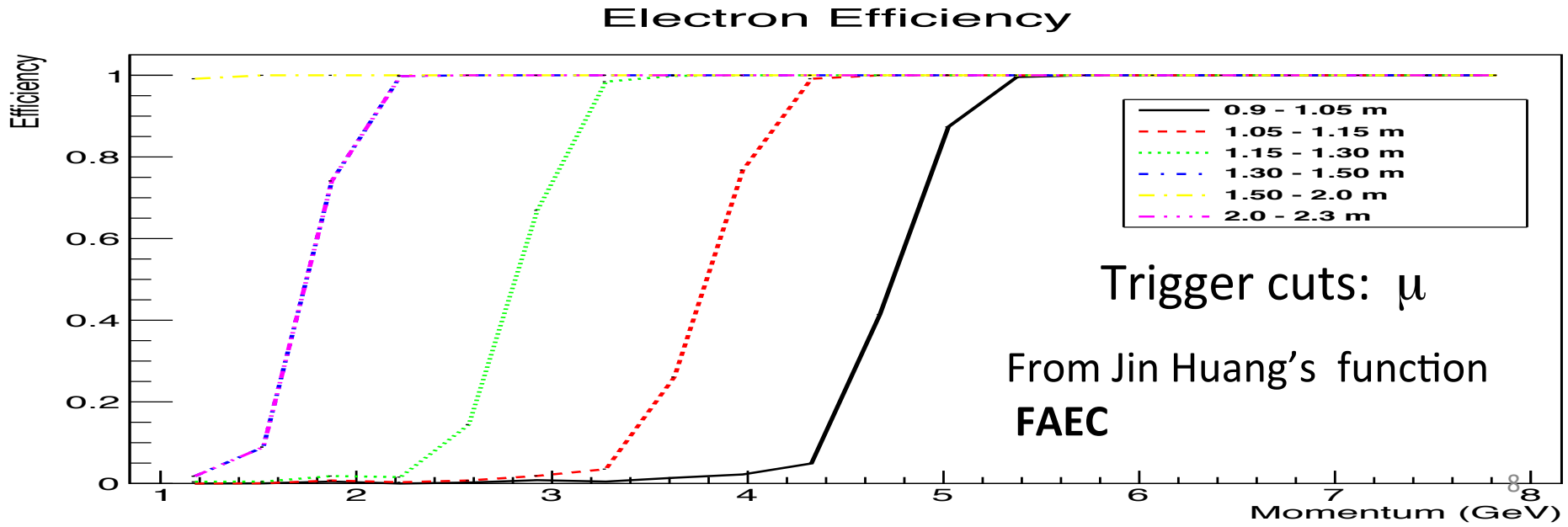
SIDIS Electron Efficiency Curves Comparison





SIDIS Electron Efficiency Curves Comparison



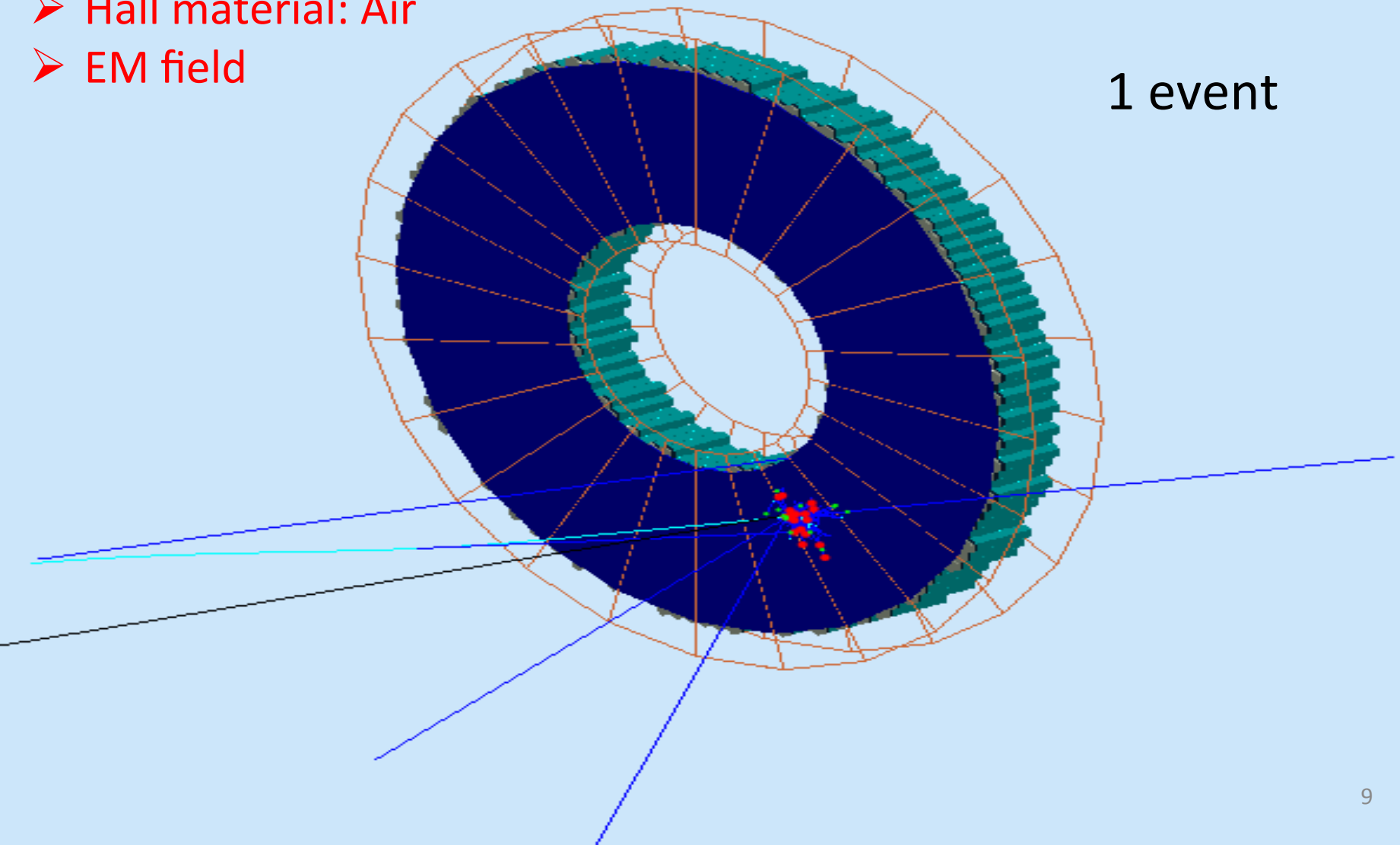


ECAL 6p1 Energy Over-summing Study

ECAL Stand-alone simulation: e- beam, E∈[0GeV, 11GeV], θ∈ [5°, 35°], ϕ ∈[-180°, 180°]

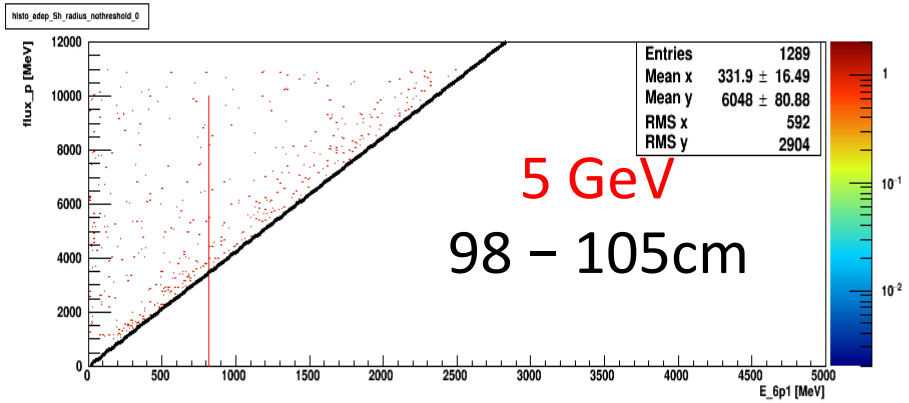
- Hall material: Air
- EM field

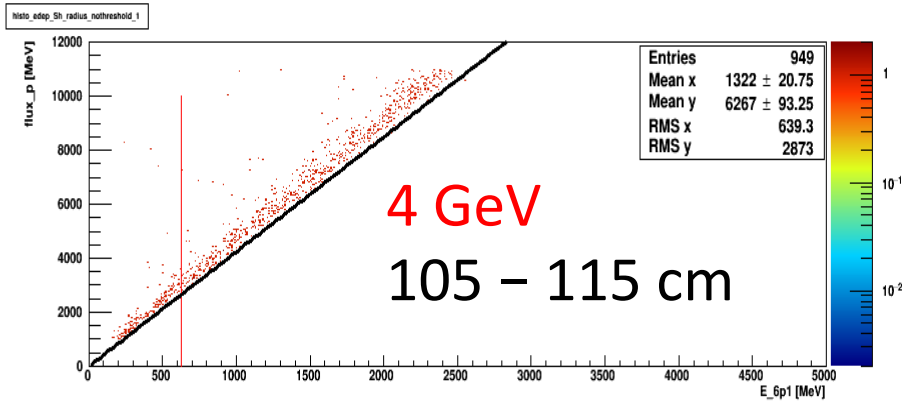
1 event

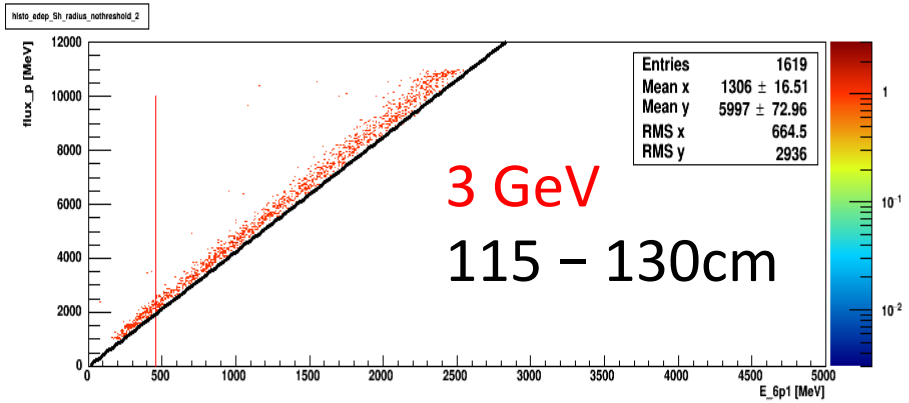


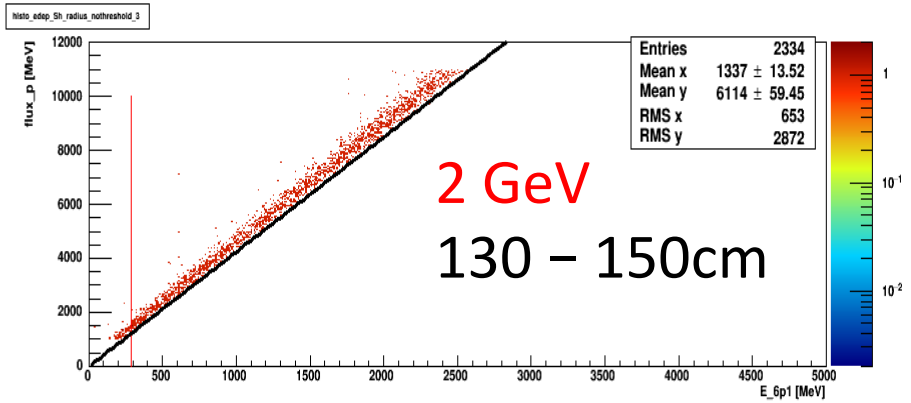
ECAL Stand-alone Simulation with Vacuumed Hall and without EM Field

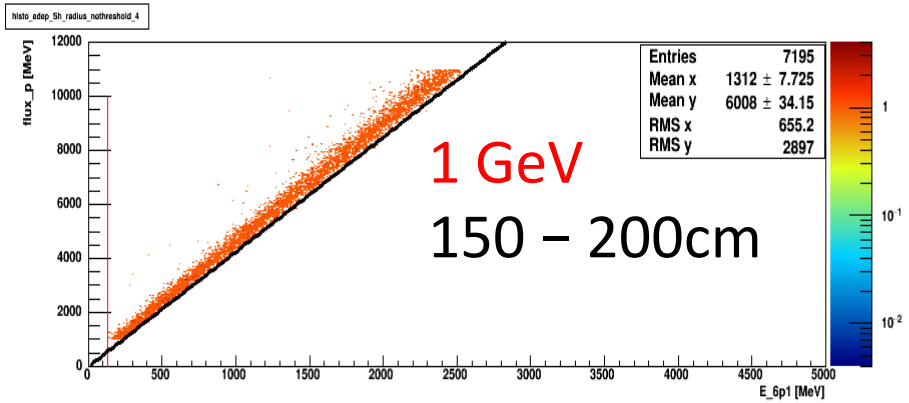
SIDIS 6+1 cluster energy FAEC ECAL Stand-alone No Filed

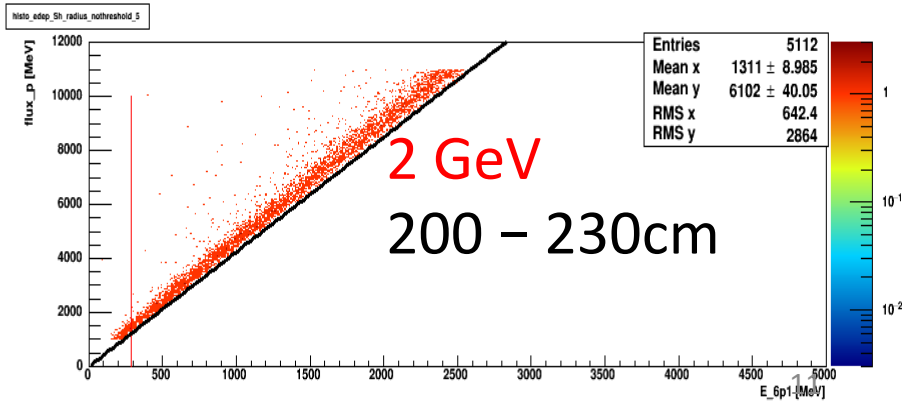






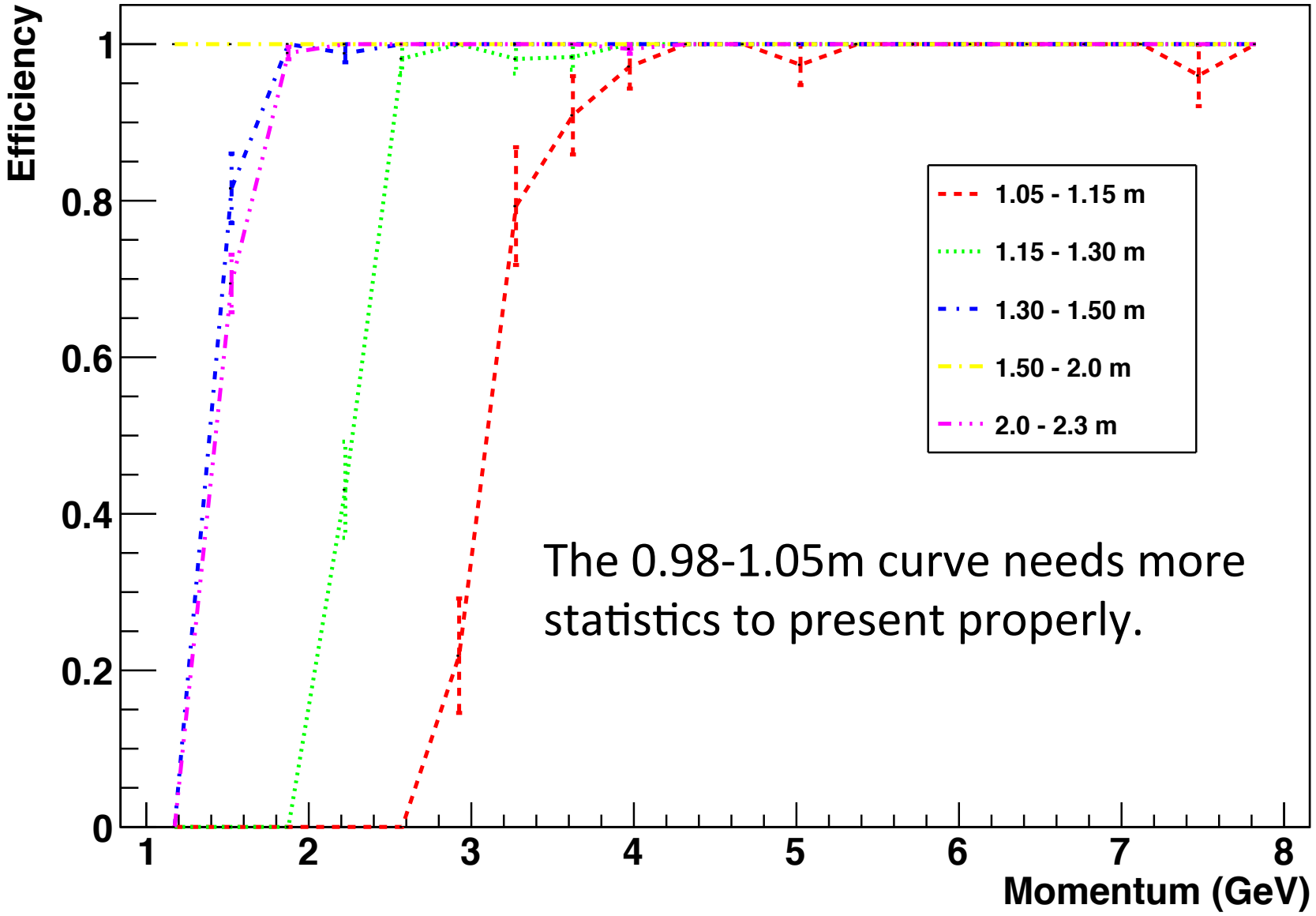






SIDIS FAEC

Electron Efficiency



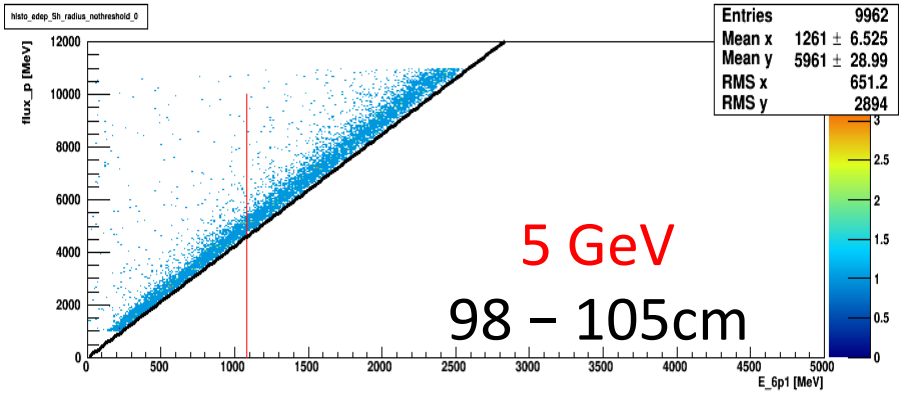
Summary and Next Steps

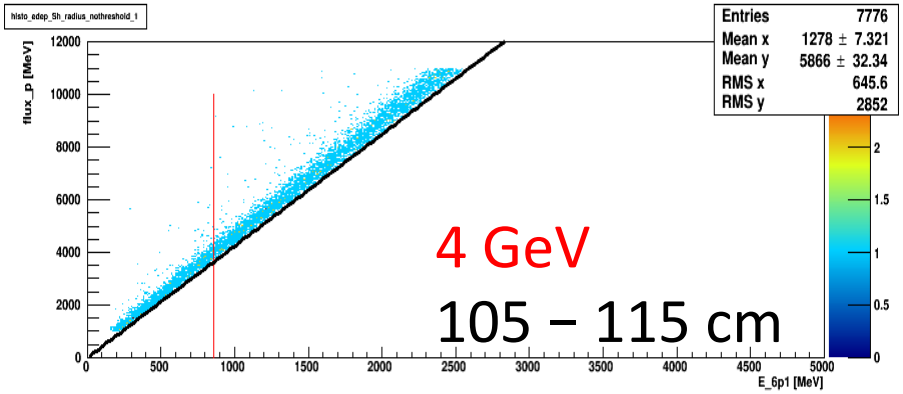
- Run more statistic simulation, and add pion backgrounds in the EC stand-alone simulation results.
- In the SIDIS full simulation results, the secondary particles (cause multi-hits on ECAL per event) behaves like backgrounds, which should be studied with the combined pions and low energy backgrounds to see total effects.

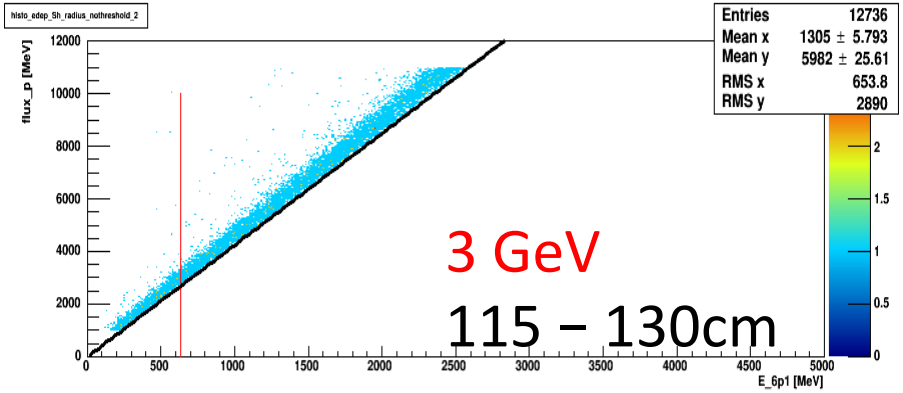
Any comments and suggestions ?

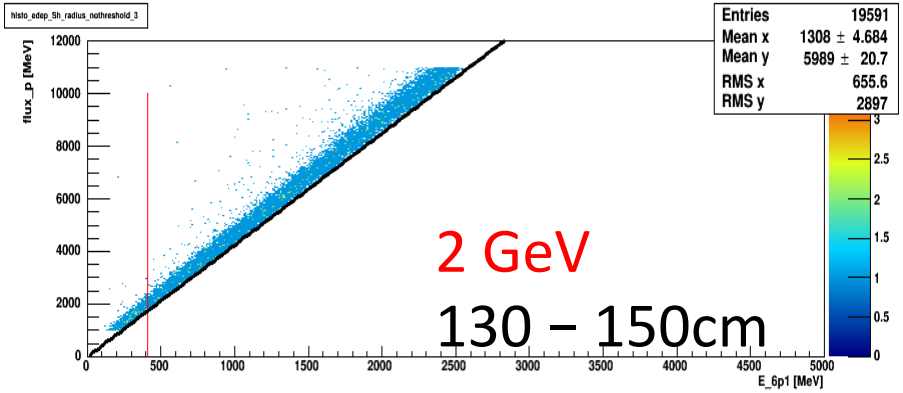
Backup

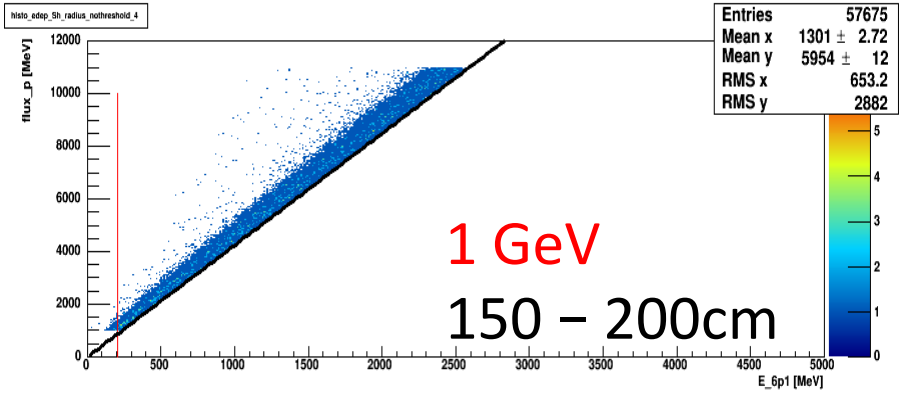
SIDIS 6+1 cluster energy FAEC Full simulation μ cut

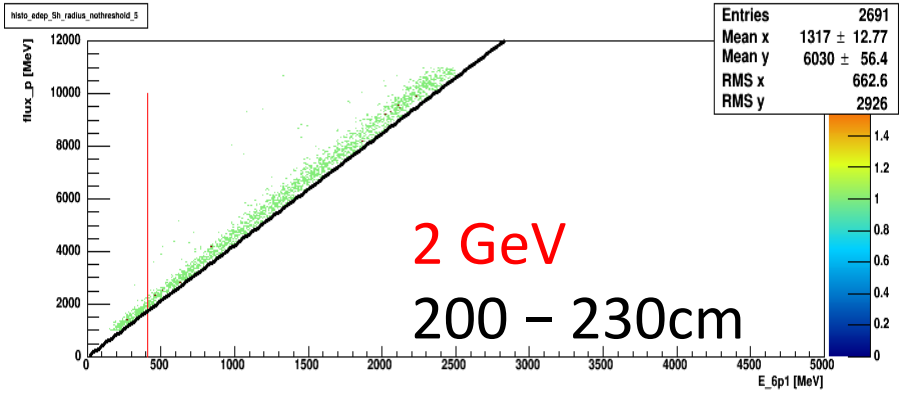




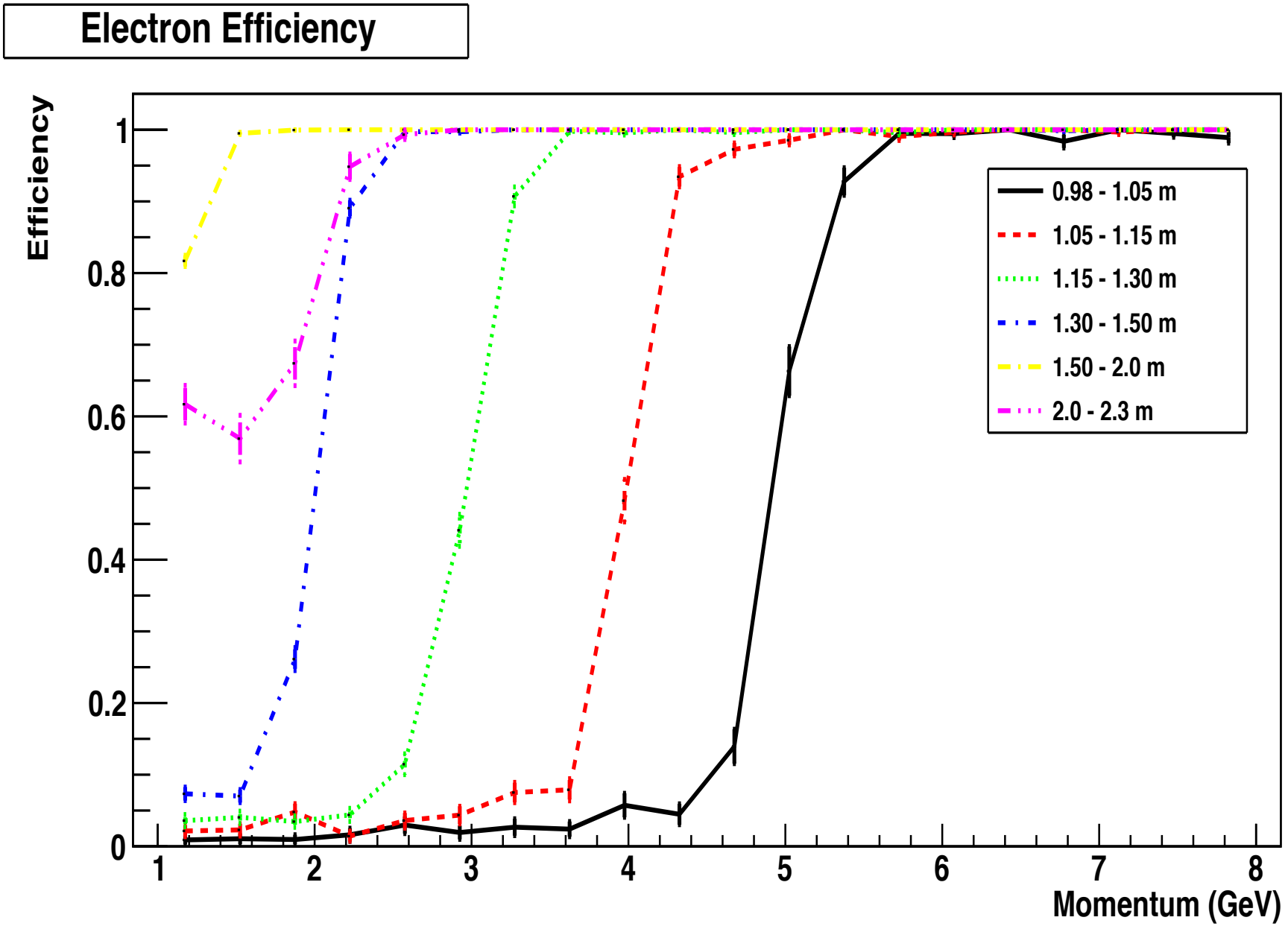




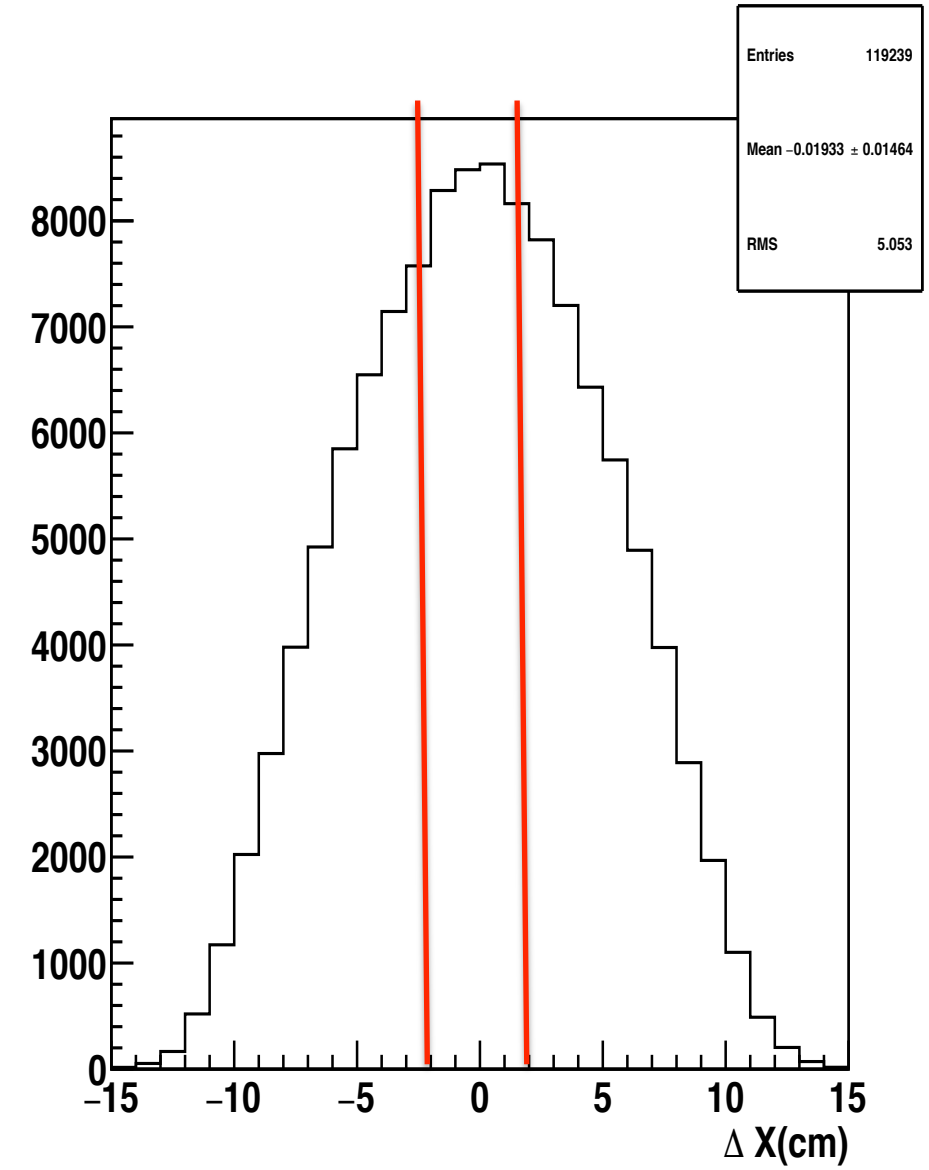


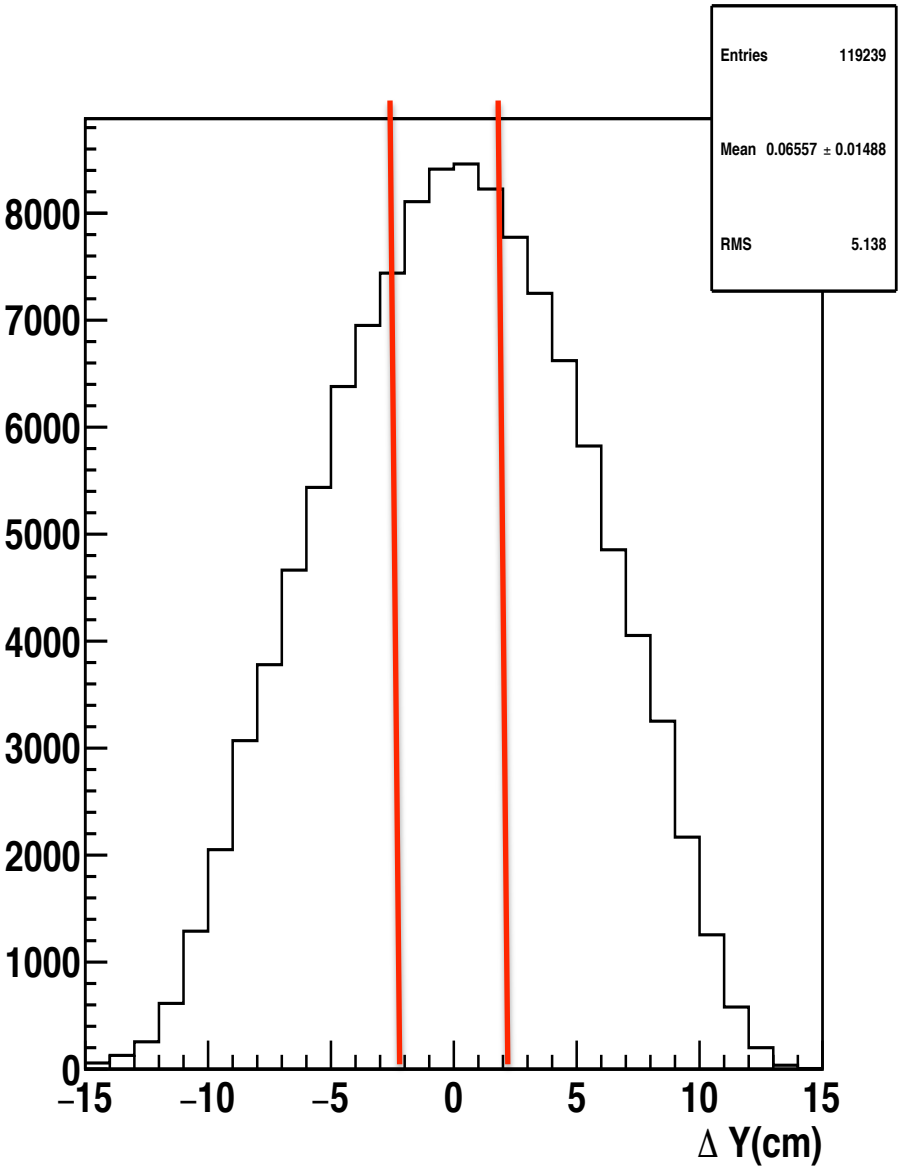


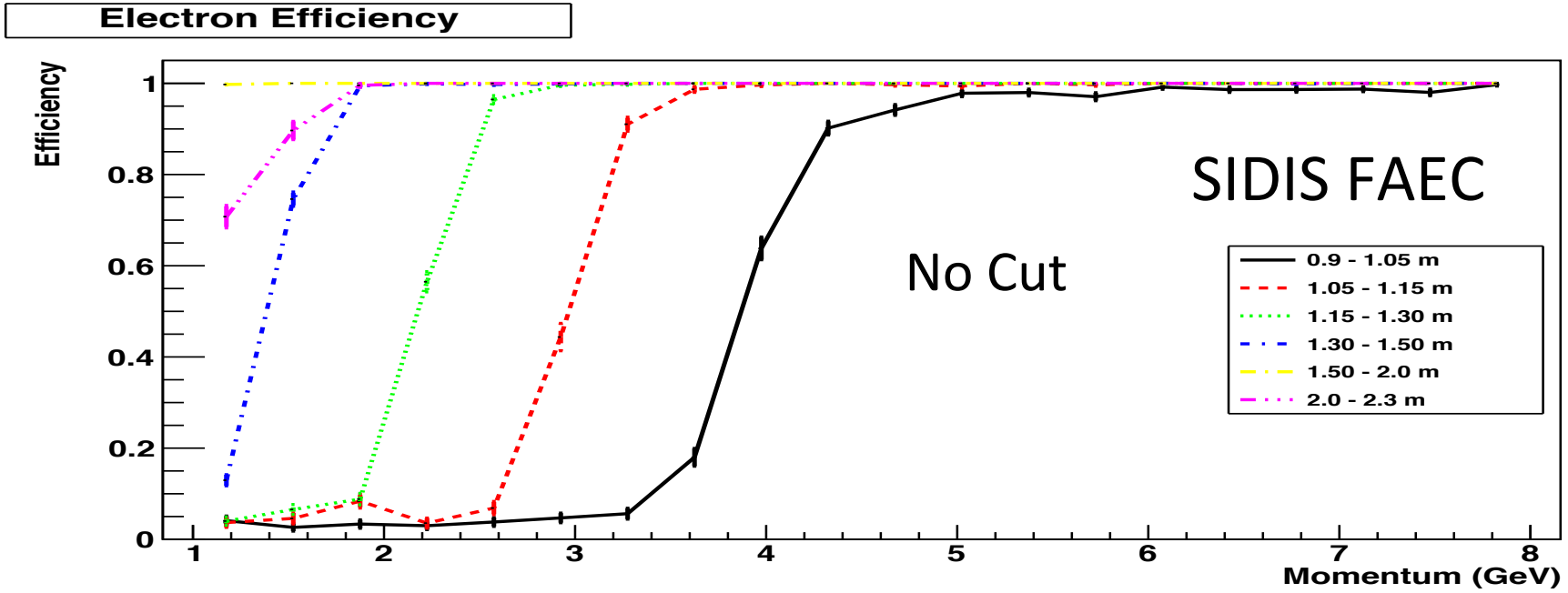
SIDIS 6+1 cluster energy FAEC Full simulation μ cut

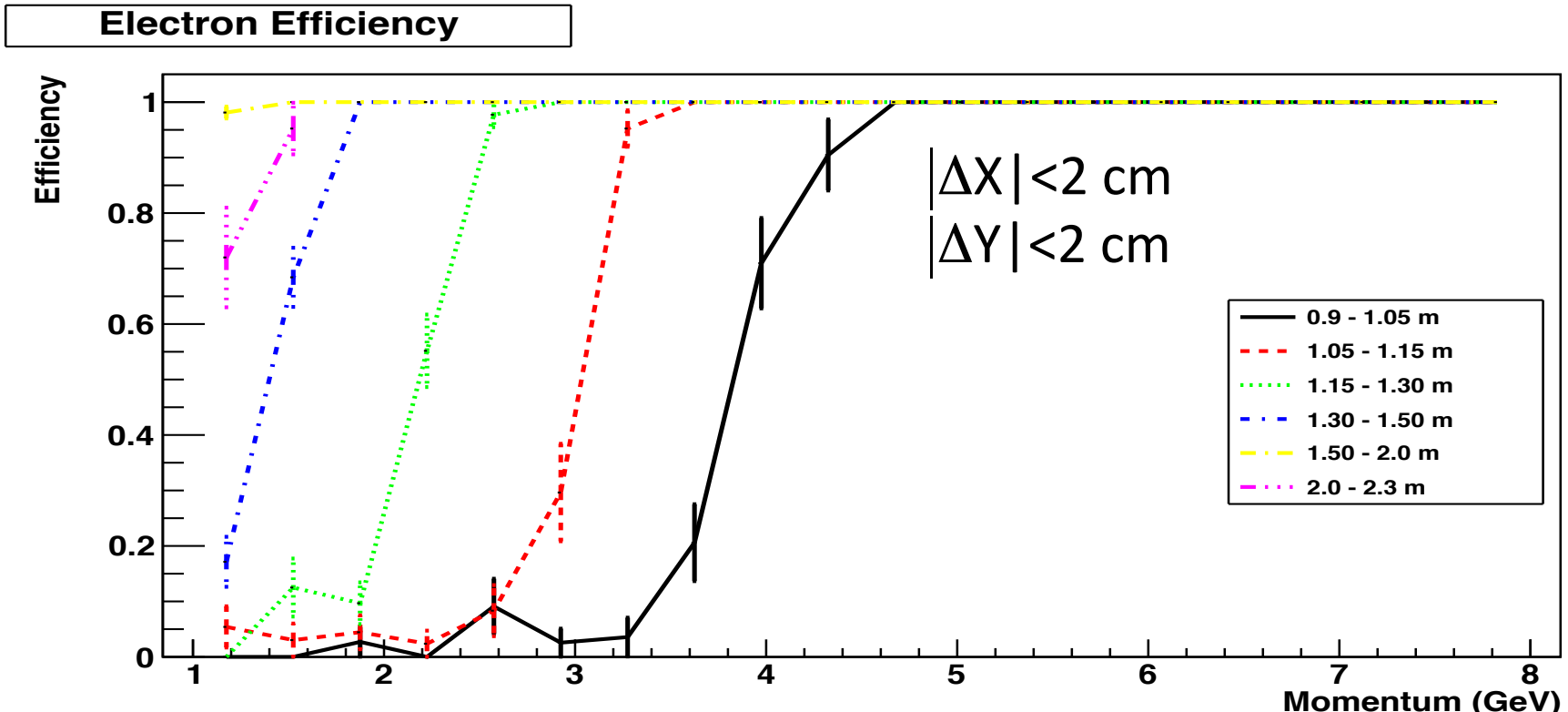


$\Delta X = X_{flux} - X_{ECblockmax}$; $\Delta Y = Y_{flux} - Y_{ECblockmax}$






Electron Efficiency
Efficiency
SIDIS FAEC
No Cut
0.9 - 1.05 m
1.05 - 1.15 m
1.15 - 1.30 m
1.30 - 1.50 m
1.50 - 2.0 m
2.0 - 2.3 m
Momentum (GeV)


Electron Efficiency
Efficiency
|ΔX|<2 cm
|ΔY|<2 cm
0.9 - 1.05 m
1.05 - 1.15 m
1.15 - 1.30 m
1.30 - 1.50 m
1.50 - 2.0 m
2.0 - 2.3 m
Momentum (GeV)