

Towards Jet Mass Determination in DR Detector

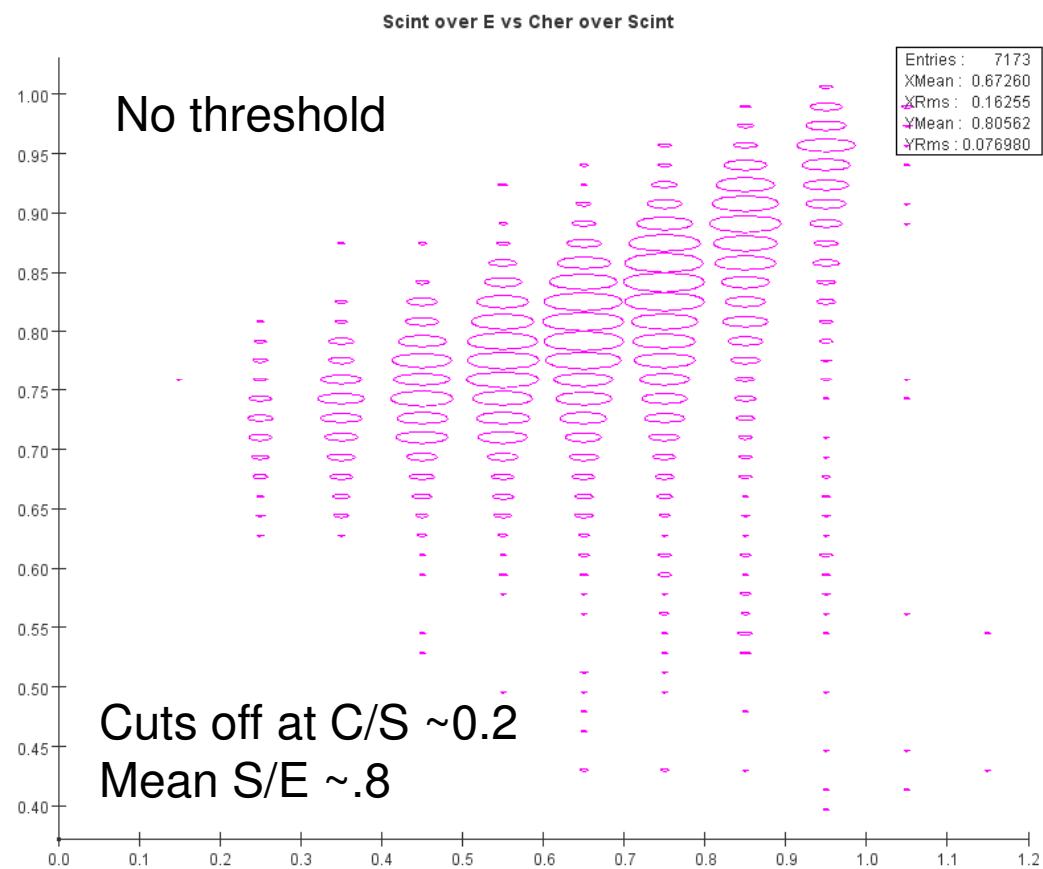
S/E vs C/S threshold dependence

Resolution of single pions vs threshold

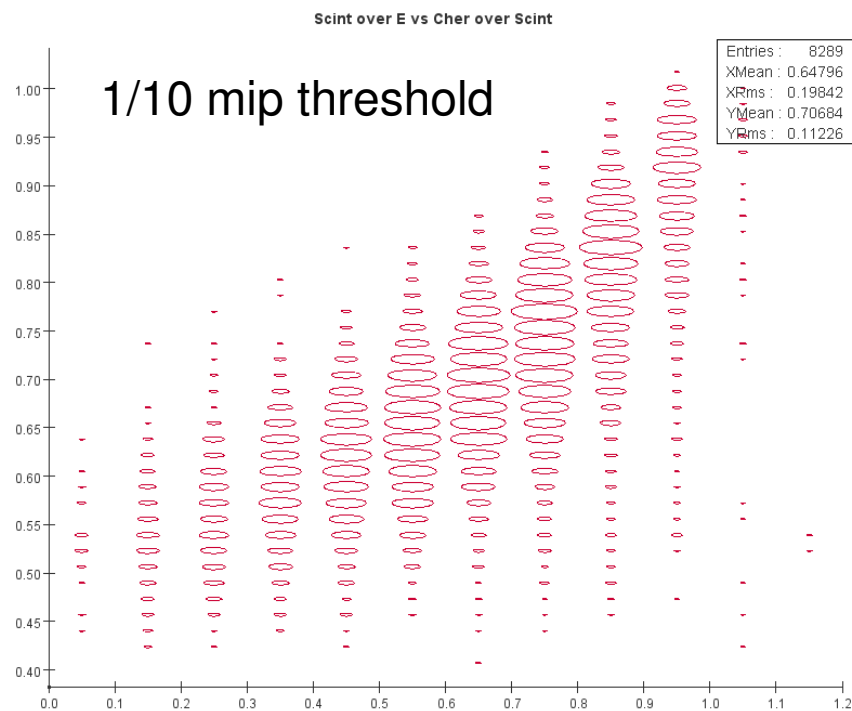
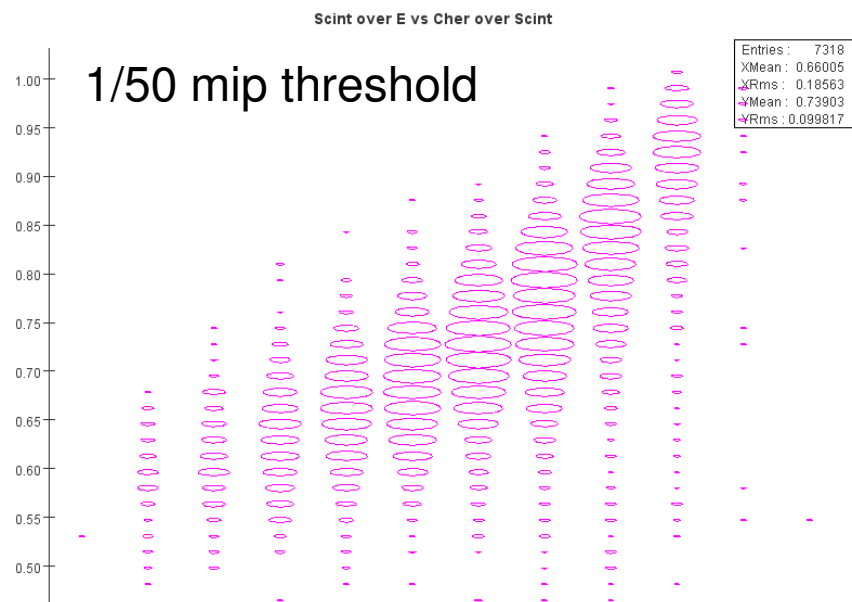
DiJet Mass measurements with C/S, B-field corrections

Next Steps

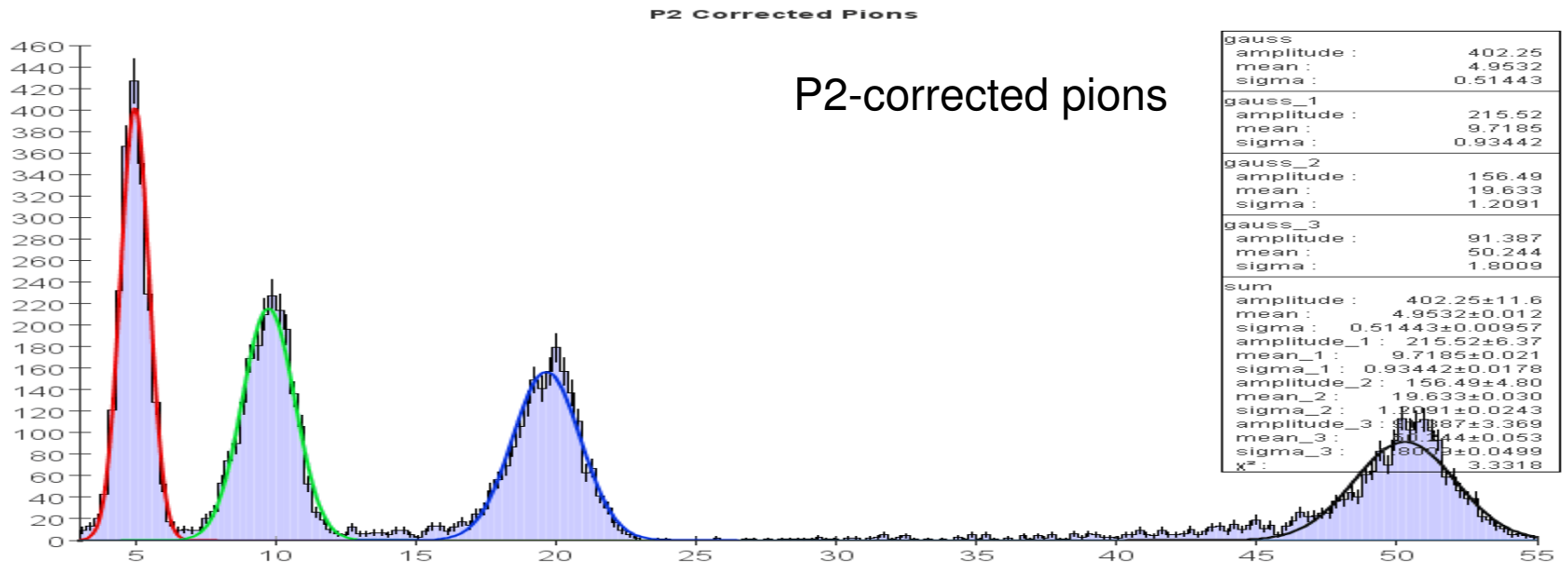
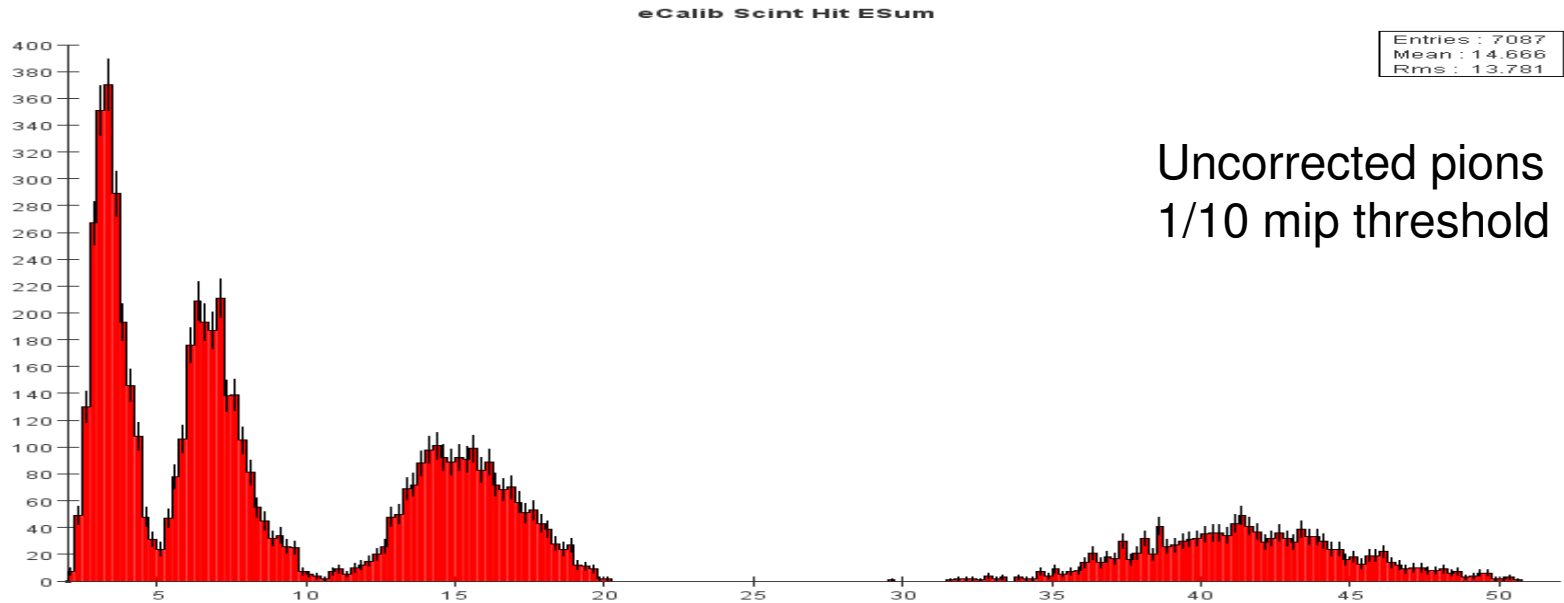
S/E vs C/S threshold dependence



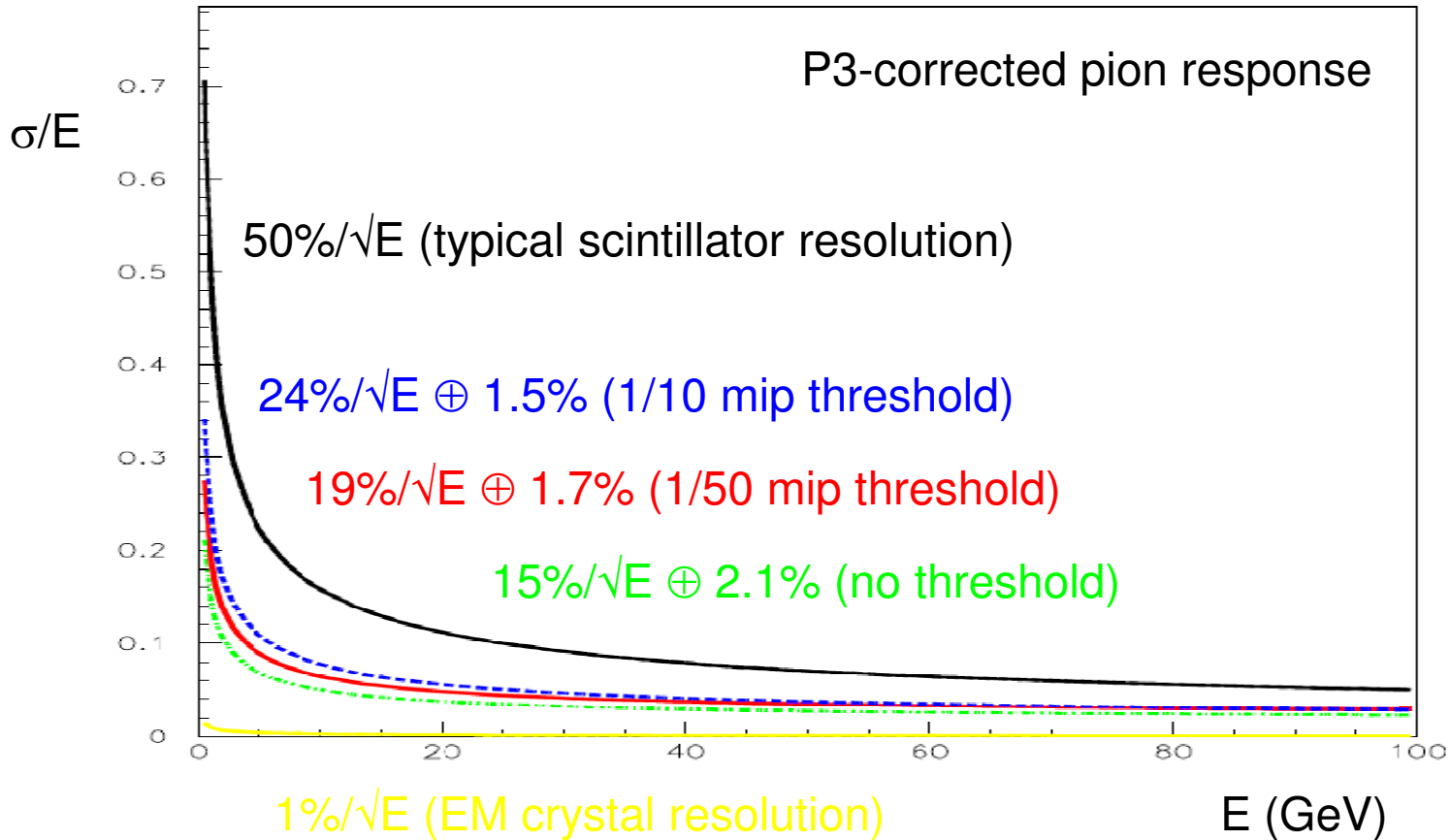
Lower C/S cutoffs
Mean S/E .74, .71



Resolution of single pions vs threshold



Resolution fits for single pions



Consistent fits for p1, p2, p3, and p4 corrected pions

Effect of lower thresholds on Particle Flow?

DiJet Mass measurements with C/S, B-field corrections

Cerenkov, Bfield Corrected Dijet Mass

Using MC ΔM

$\sigma/M \sim 0.064$

Ceren Corrected Scin Jet Mass	
Entries :	983
Mean :	84.756
Rms :	11.555
gauss	
amplitude :	122.22
mean :	87.184
sigma :	5.5782
gauss_1	
amplitude :	6.7231
mean :	76.396
sigma :	23.606
sum	
amplitude :	122.22±6.321
mean :	87.184±0.24
sigma :	5.5782±0.2838
amplitude_1 :	6.7231±1.950
mean_1 :	76.396±3.443
sigma_1 :	23.606±4.478
χ^2 :	1.1746

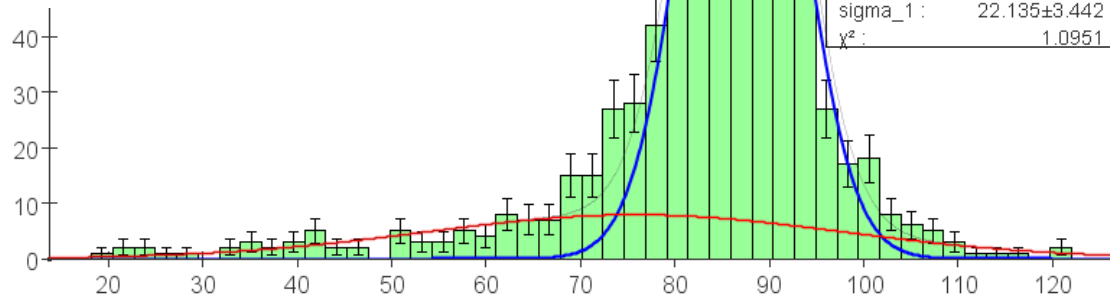
Cerenkov, TrEP Corr Dijet Mass

Using PFA ΔM

$\sigma/M \sim 0.065$

Ceren Corrected Scin Jet Mass	
Entries :	983
Mean :	84.381
Rms :	12.211
NaN :	2
SumOfWeights :	981.00
gauss	
amplitude :	119.87
mean :	87.003
sigma :	5.6835
gauss_1	
amplitude :	7.8957
mean :	75.650
sigma :	22.135
sum	
amplitude :	119.87±6.372
mean :	87.003±0.26
sigma :	5.6835±0.3139
amplitude_1 :	7.8957±2.179
mean_1 :	75.650±3.075
sigma_1 :	22.135±3.442
χ^2 :	1.0951

1/10 mip threshold
 C/S, ΔM (B-field) corrections
 ZZ \rightarrow qq $\nu\nu$ @ 500 GeV



DiJet Mass measurements with C/S, B-field corrections

Cerenkov, TrEP Corrected DiJet Mass

1/50 mip threshold

Using PFA ΔM

$\sigma/M \sim 0.058$

Ceren Corrected Scin Jet Mass	
Entries :	975
Mean :	86.093
Rms :	12.150
gauss	
amplitude :	120.92
mean :	89.132
sigma :	5.2083
gauss_1	
amplitude :	13.967
mean :	82.630
sigma :	16.404
sum	
amplitude :	120.92±6.795
mean :	89.132±0.26
sigma :	5.2083±0.3251
amplitude_1 :	13.967±4.240
mean_1 :	82.630±1.73
sigma_1 :	16.404±2.152
χ^2 :	1.0691

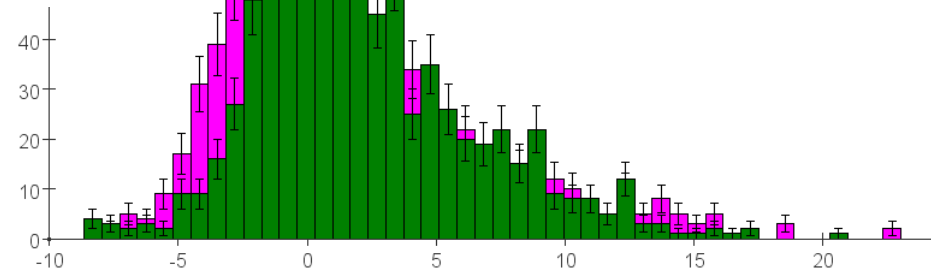
ΔM Correction
 Pink – MC “Tracks”
 Green – PFA Track EPs

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Delta M Mp M
 Delta M Track Mp M

Delta M Mp M	
Entries :	1000
Mean :	1.3861
Rms :	4.6833
Delta M Track Mp M	
Entries :	1000
Mean :	1.7367
Rms :	4.0398

Improved mass resolution for this method with lower threshold



ΔM (GeV)

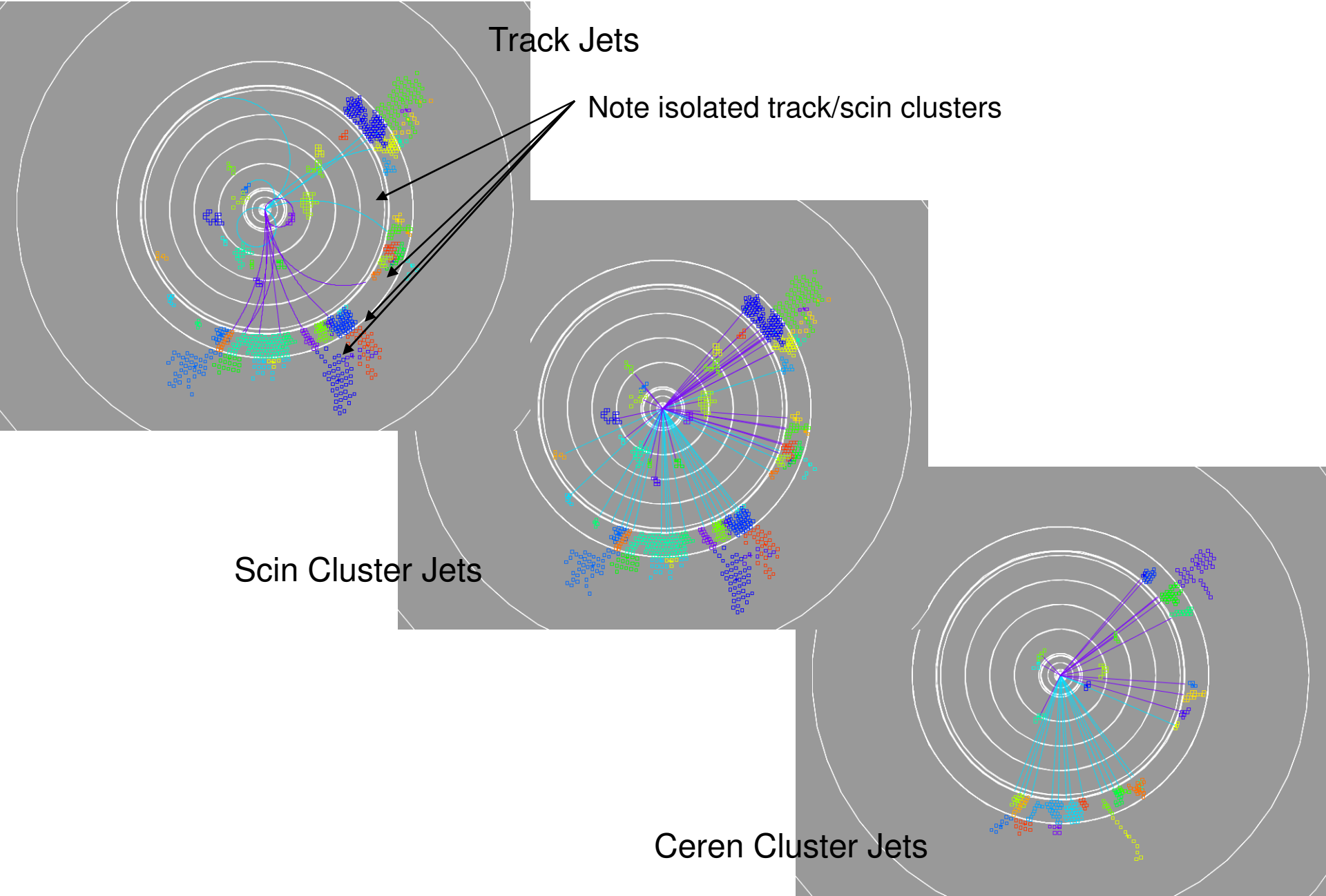
Next Steps

Track Jets

Note isolated track/scin clusters

Scin Cluster Jets

Ceren Cluster Jets



Next Steps

