

DONUT Jets

Bruce Baller

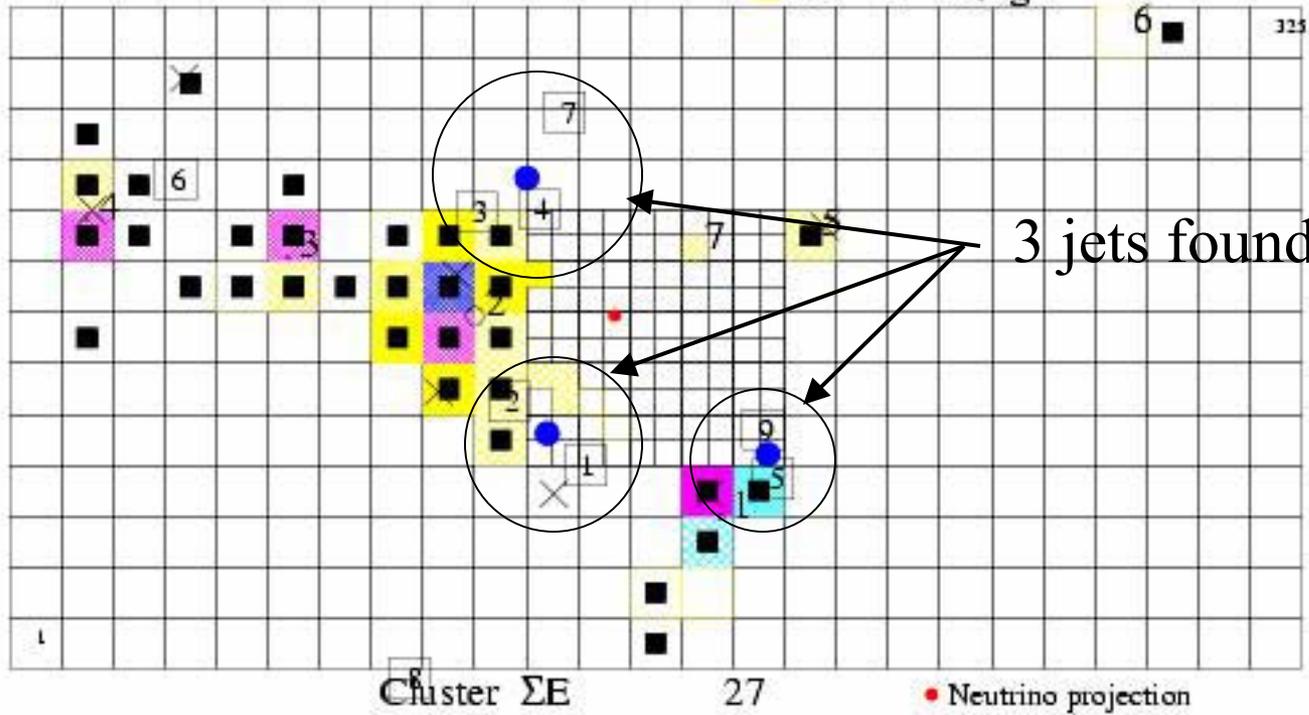
7/22/03

Why & How

- Analysis of “funky” CCE events uses EMCal cluster energy requirement
- Probability of large energy deposition in EMCal increases with higher multiplicity of high momentum tracks
- Simple minded cone jet algorithm (jetcone.sf, jetcone.inc)
- Jet = 2 or more emulsion tracks (w nseg>3) with $\theta < 40$ mr
- Jet direction = average angle of jet tracks
- Associate EMCal cluster with jet

E872 Run= 2884 Event= 10377

- E 18 GEV
- 8.5 e 18 gev
- 4.0 e 8.5 gev
- 1.8 e 4.0 gev
- 0.9 e 1.8 gev
- 0.4 e 0.9 gev

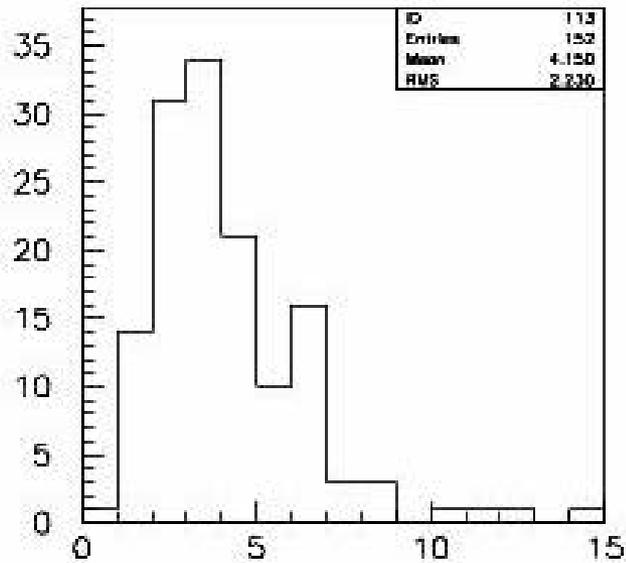


1	7.2
2	14.8
3	1.9
4	1.6
5	0.6
6	0.2
7	0.6

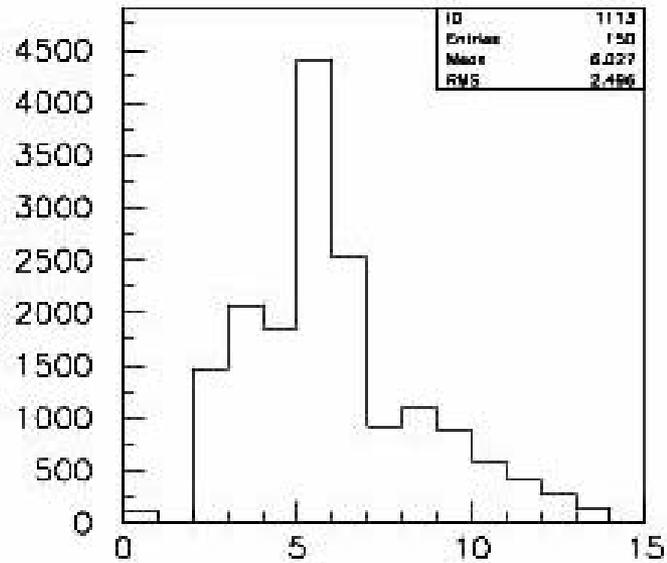
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Data & MC comparison

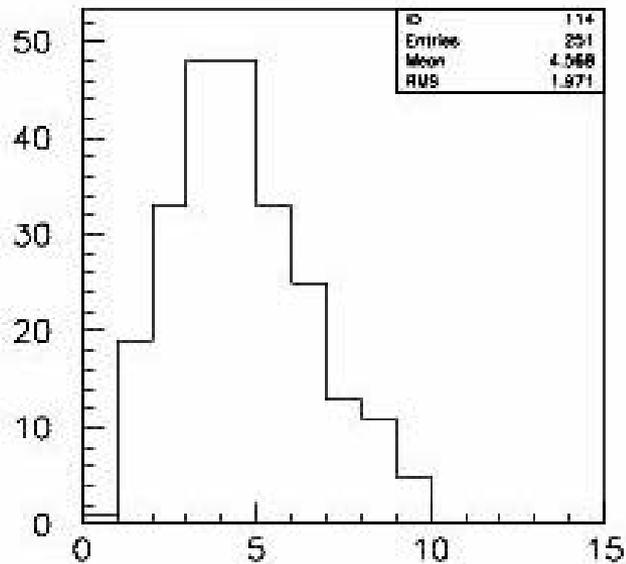
- Generated 850 MC events (Period 4) with “out of the box” parameters
 - Generated m-files
 - Use standard code for automatic MC vertex location
 - Event located if >1 emulsion track within $5\ \mu\text{m}$ of true vertex position
- Event is called “CCmu” in following histograms if a track has >3 hits in the MID



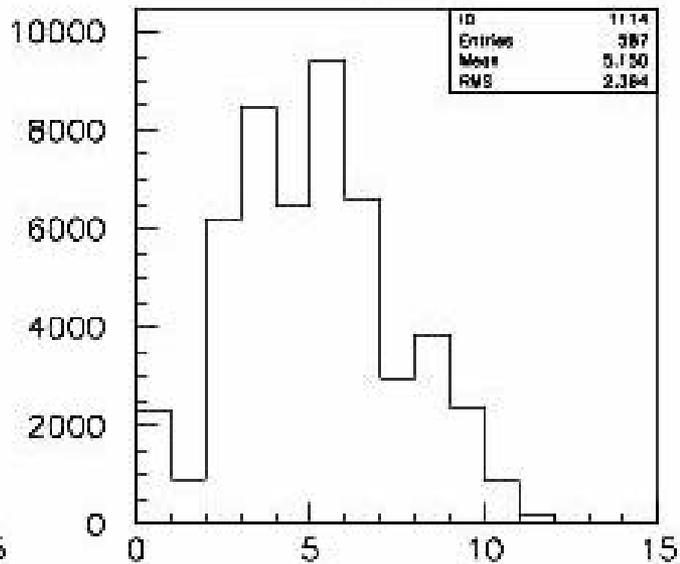
ntrks CCmu



ntrks CCmu MC

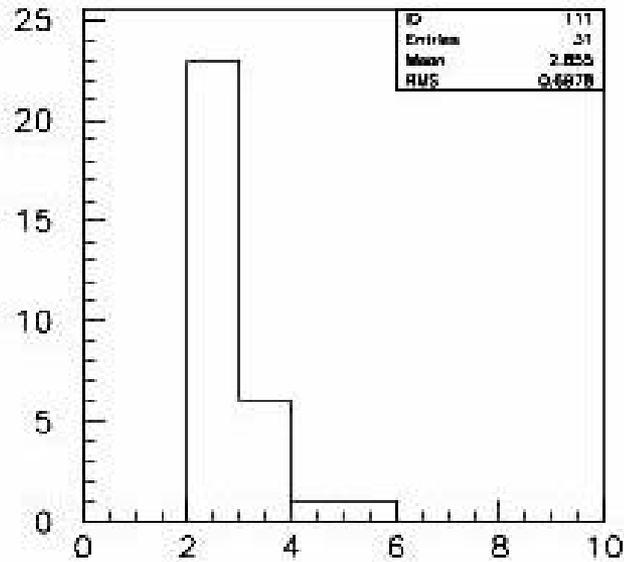


ntrks Not CCmu

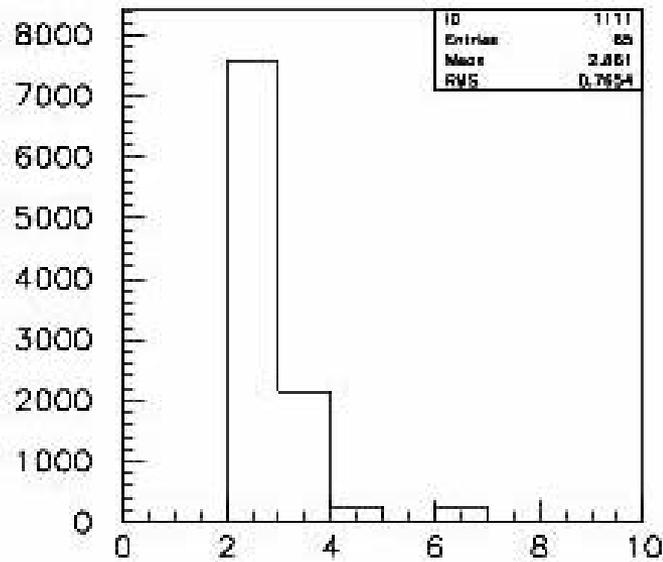


ntrks Not CCmu MC

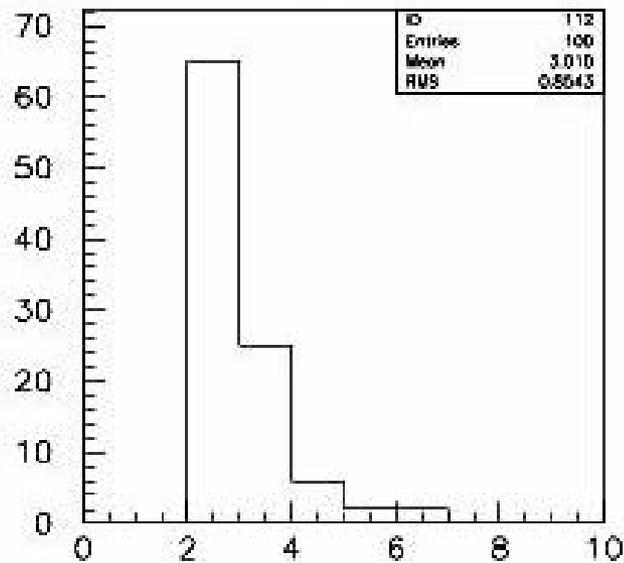
Too many
MC
tracks/event!
Location bias



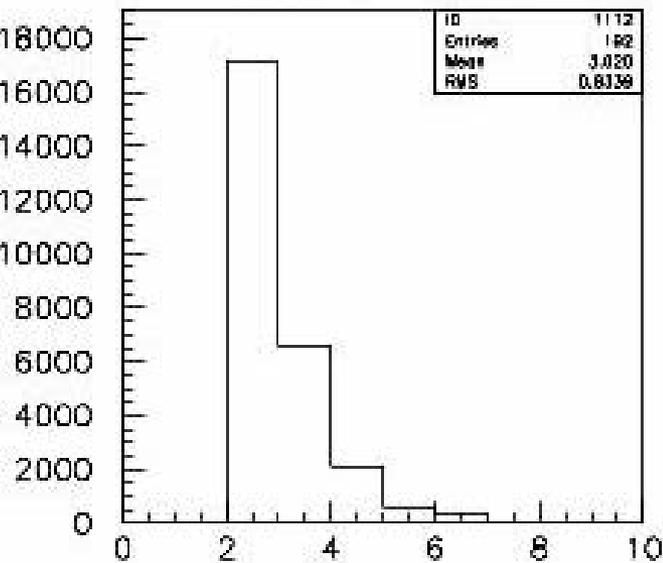
Jet ntrks CCmu



Jet ntrks CCmu MC

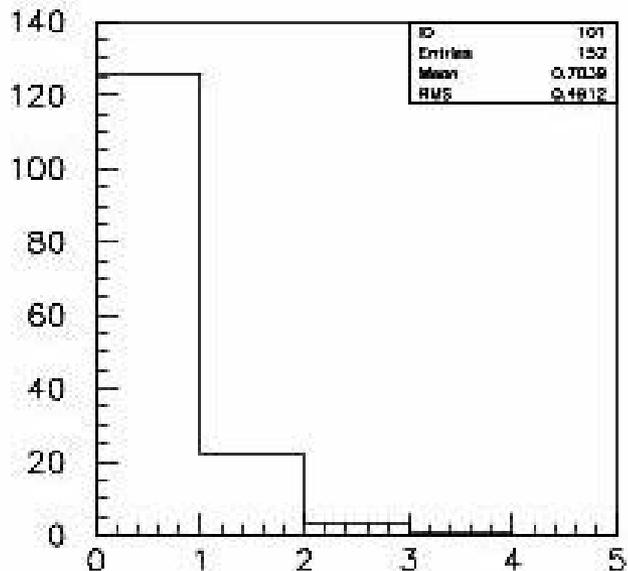


Jet ntrks Not CCmu

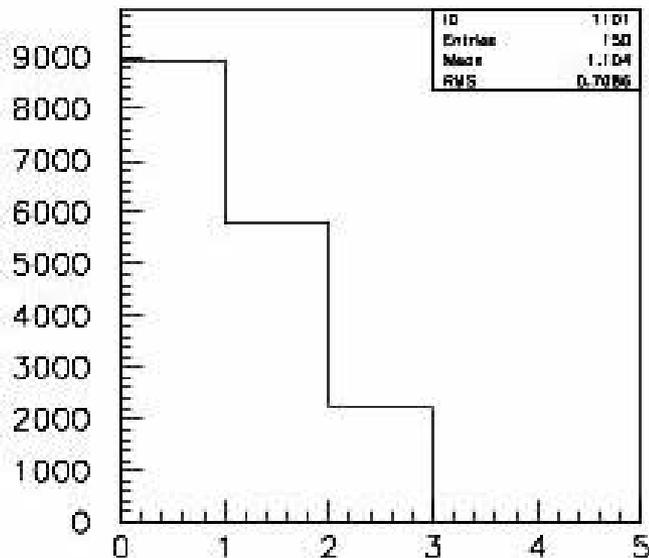


Jet ntrks Not CCmu MC

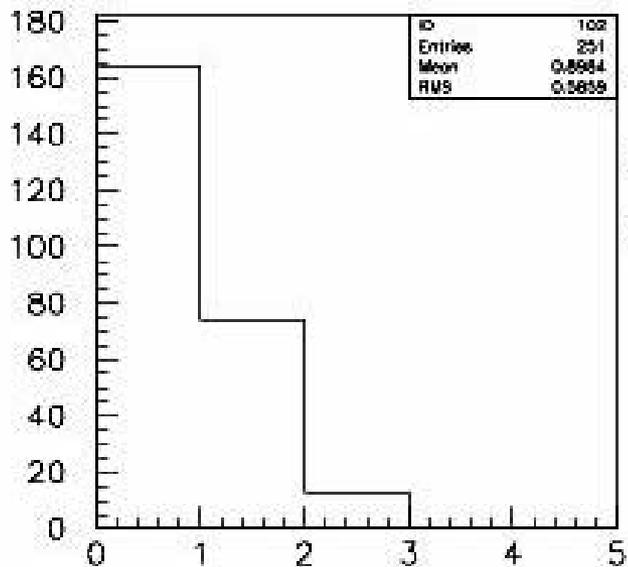
Number of tracks/jet
Good agreement



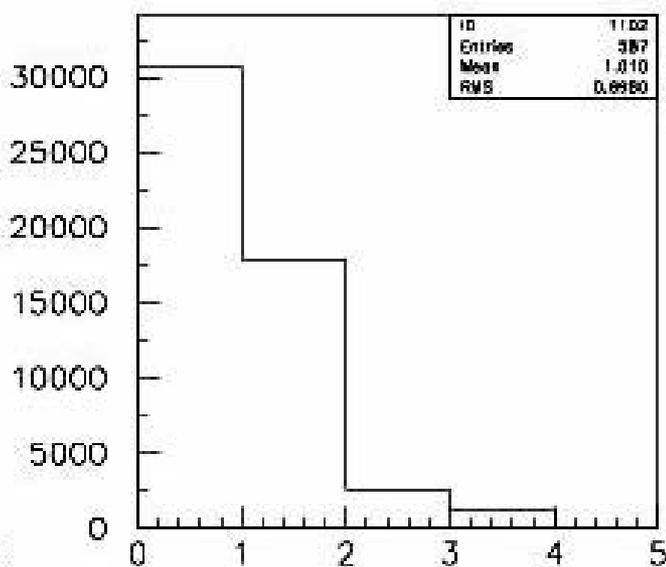
njet CCmu



njet CCmu MC

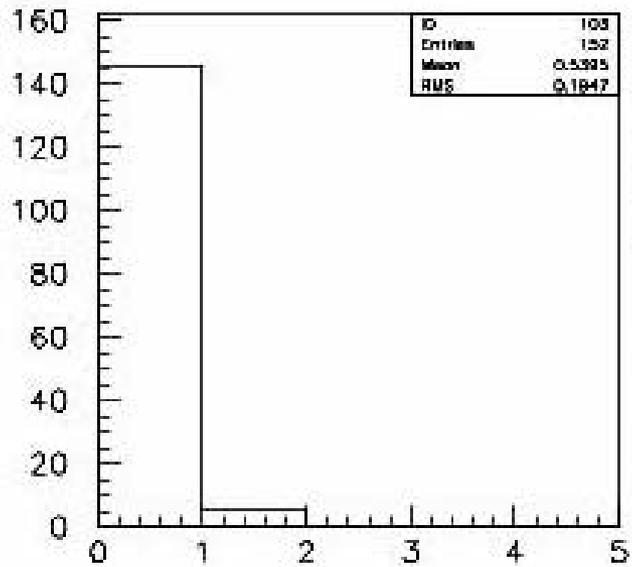


njet Not CCmu

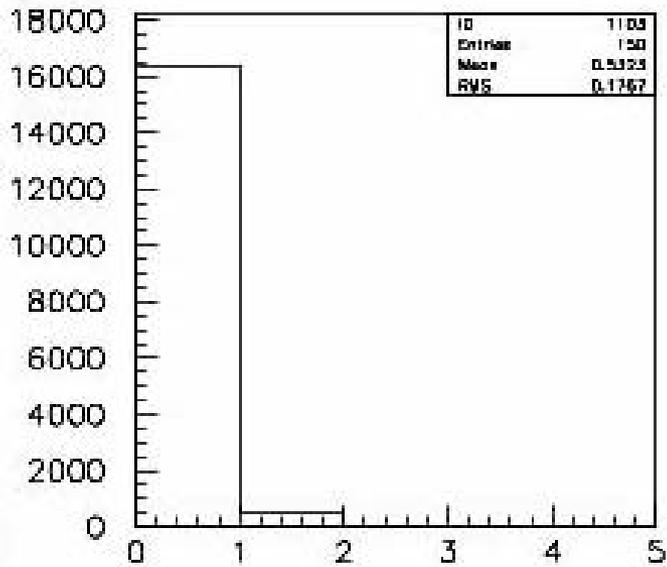


njet Not CCmu MC

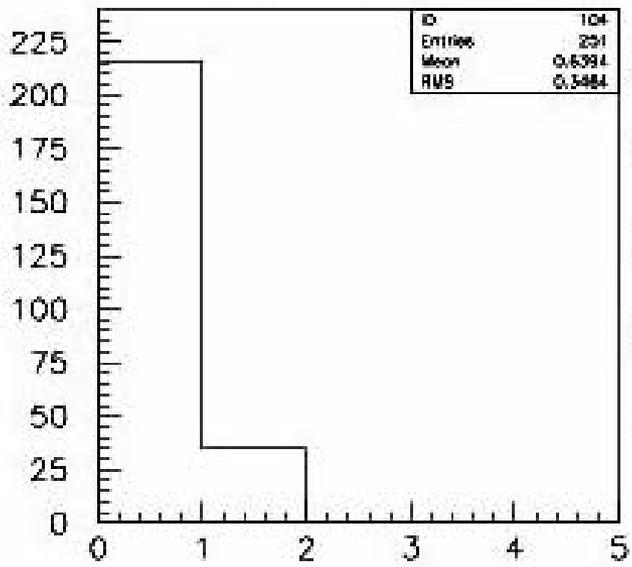
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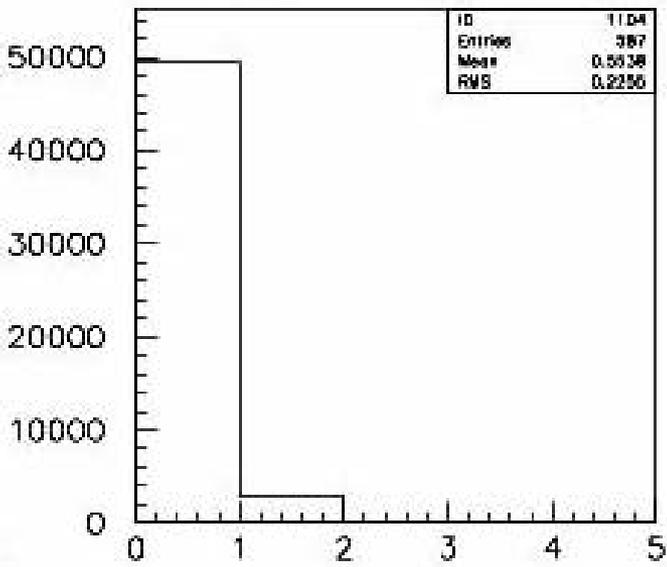
njet CCmu Eclus>10



njet CCmu MC Eclus>10



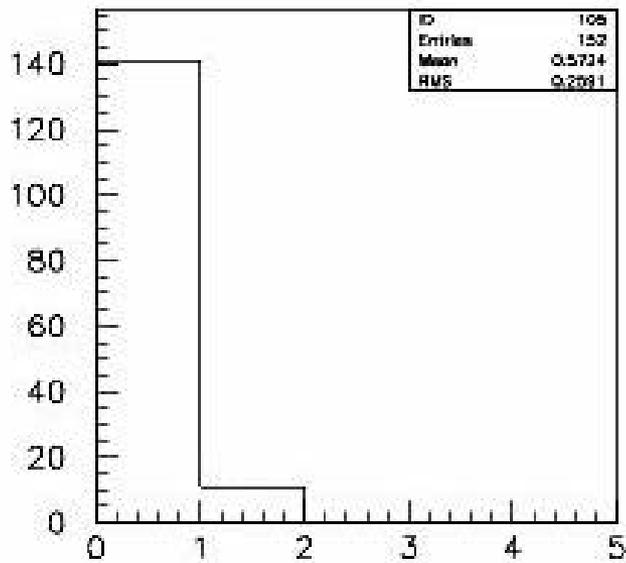
njet Not CCmu Eclus>10



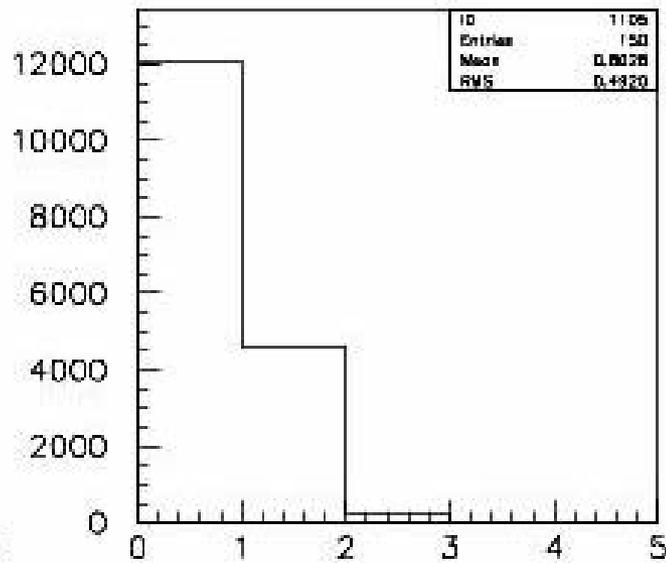
njet Not CCmu MC Eclus>10

Cluster energy requirement

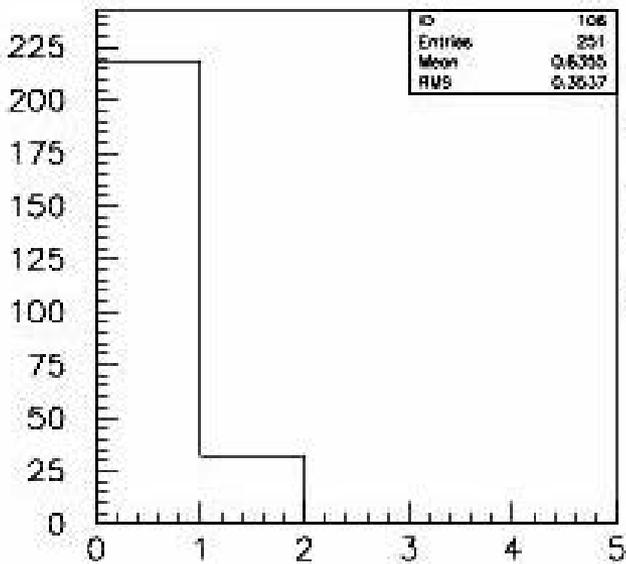
CCmu OK
CCe funky



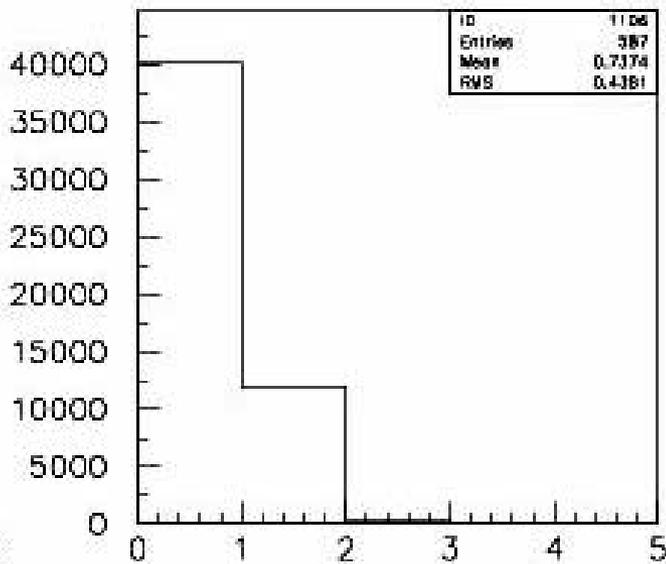
njet CCmu $0 < E_{clus} < 10$



njet CCmu MC $0 < E_{clus} < 10$



njet Not CCmu $0 < E_{clus} < 10$



njet Not CCmu MC $0 < E_{clus} < 10$

Relax cluster
energy
requirement
Biased

Summary

- Need MC event selection cut to mimic data event location efficiency
 - How does the ANN handle this?