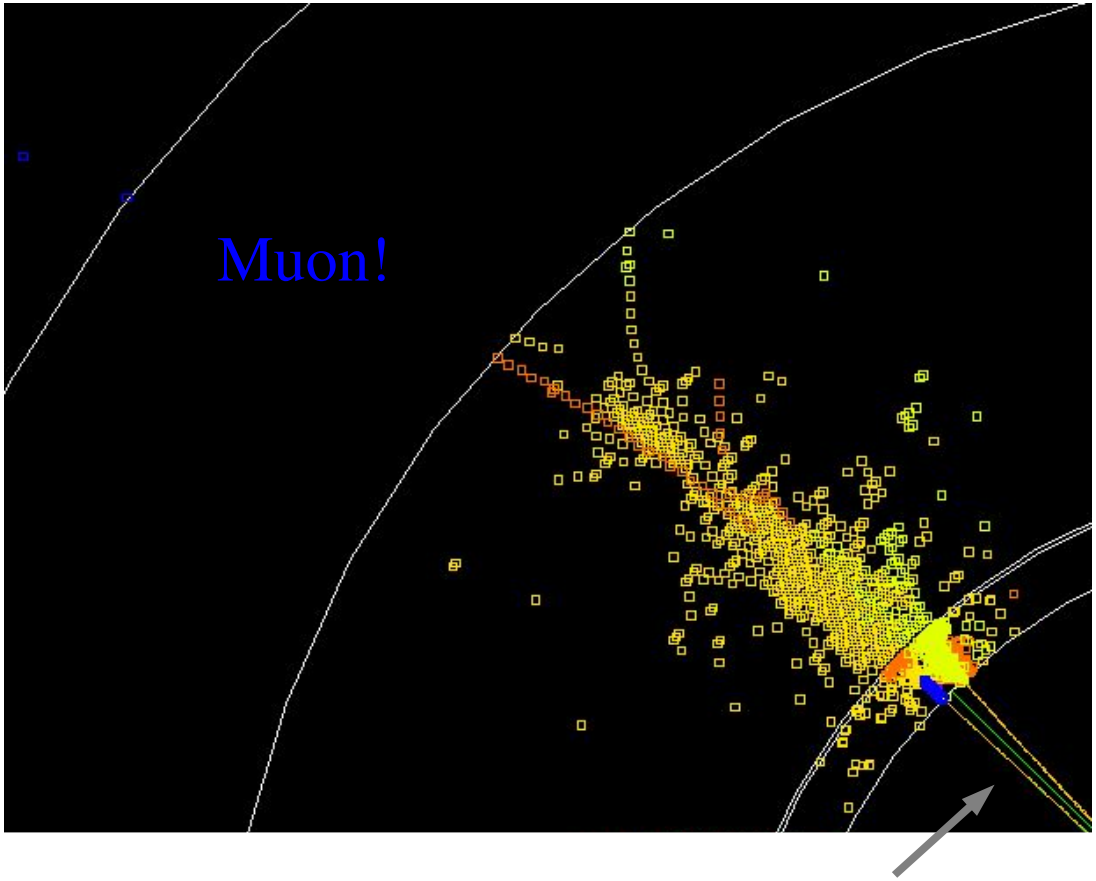
Improving the PFA

- Special scan: Study outliers
  - secondary muons
  - tracker showers
- General study: Charged and neutral energies per event vs. truth

Outliers: secondary muons

500 GeV qq file 1 event 456

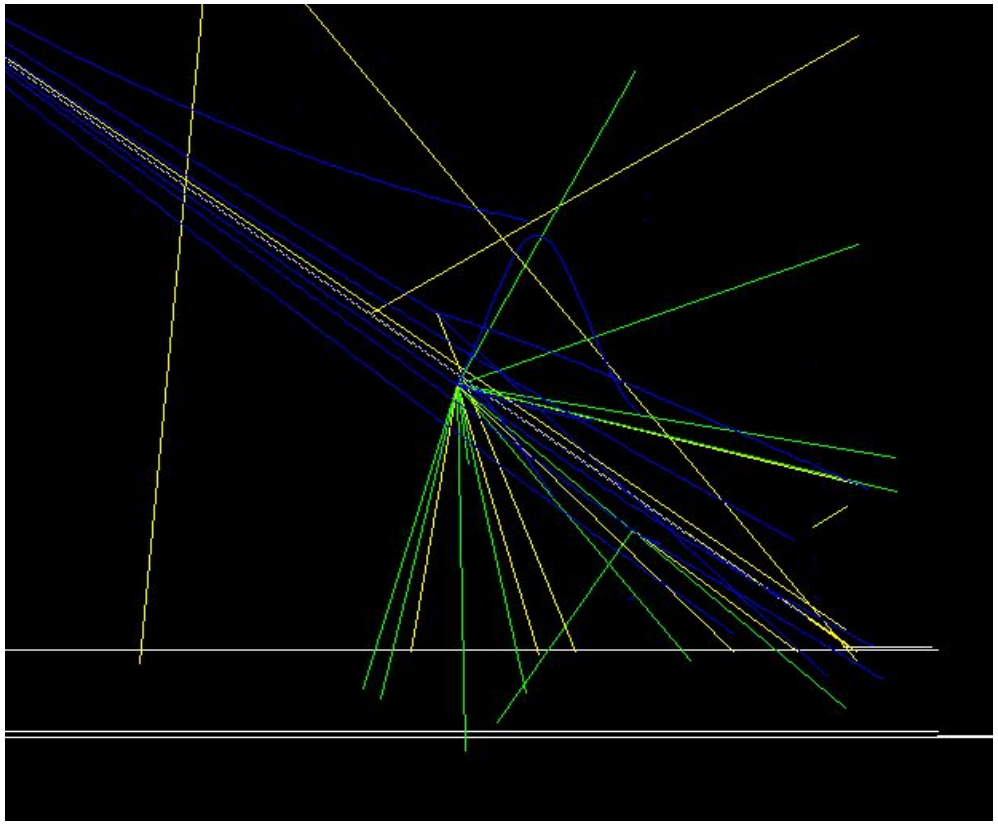


191 GeV track + 164 GeV fake neutral

- primary track tagged as muonic
- hadronic shower not matched to it
- could be accessed by isolation criterion

Outliers: tracker showers

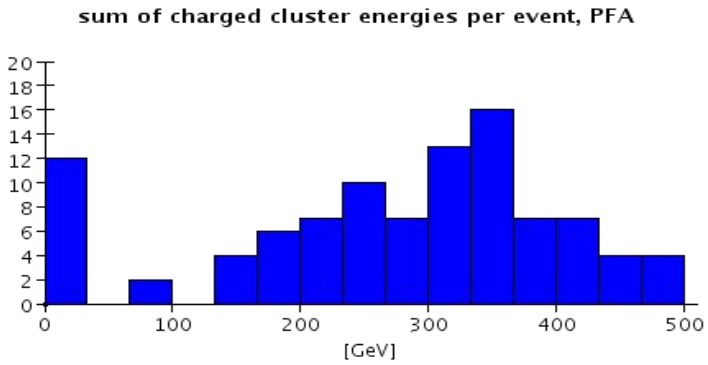
500 GeV qq file 5 event 122: 691 GeV reconstructed

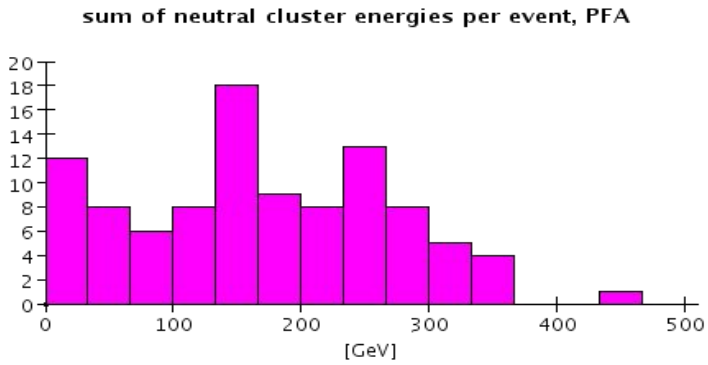


(Truth particles)

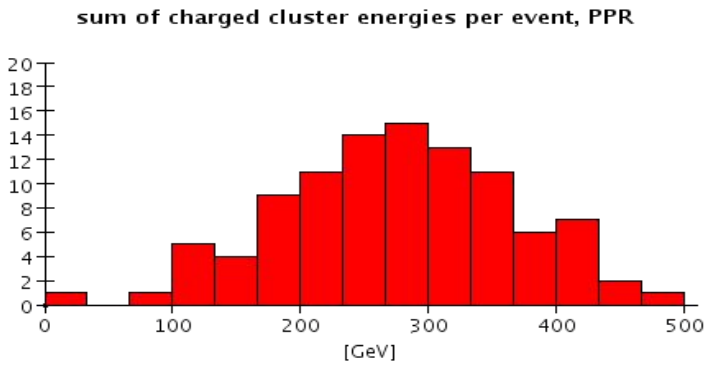
- shower from material interaction in tracker not reproduced by tracking
- track\cluster matching fails
- events should be excluded

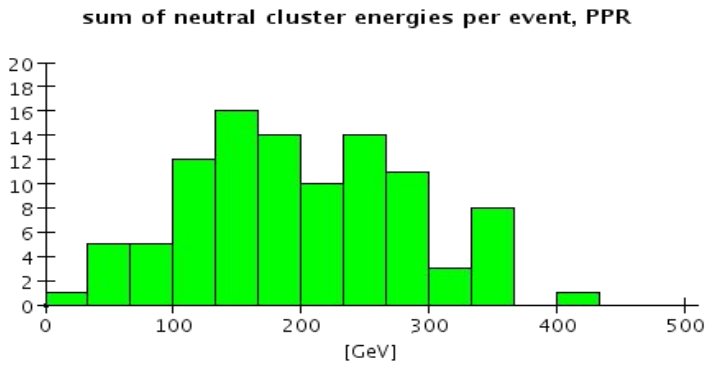
Charged and neutral energies





PFA: More bad reconstructed events with low energy





Energy sum is calculated from all clusters which contribute to any reconstructed particle (therefore only control plots in the charged case).

Conclusion

- Outliers show surprising effects
- General studies will be continued to gain quantitative understanding of PFA deficiencies