



THE UNIVERSITY
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PFA diagnostics
@ 100, 200, 350 & 500 GeV

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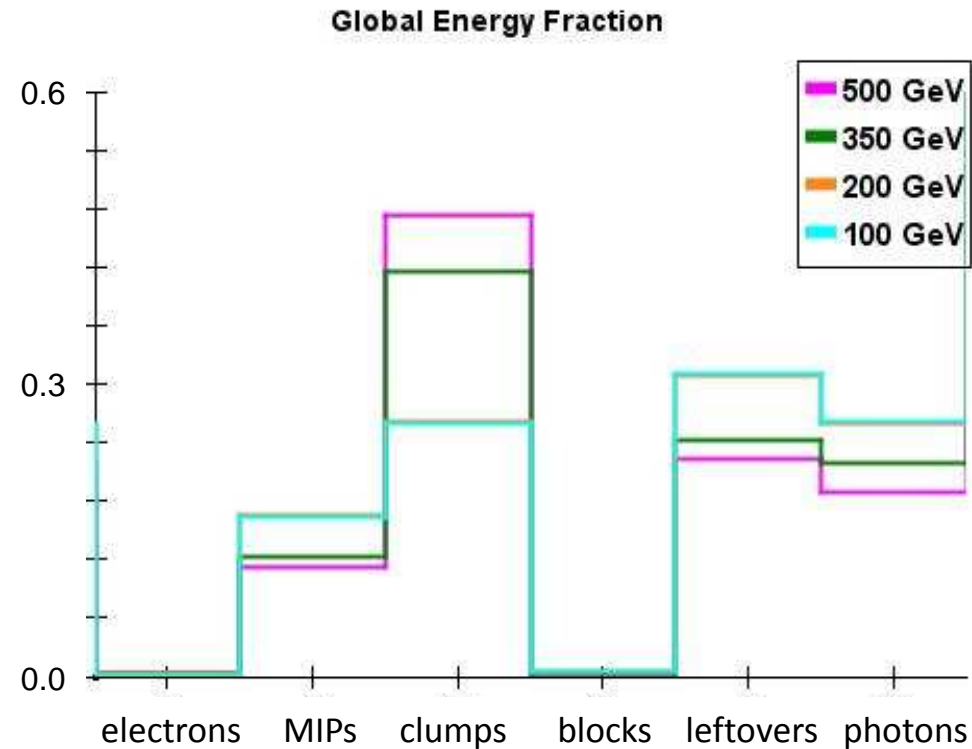
Outline



Comparison for 100, 200, 350 & 500 GeV:

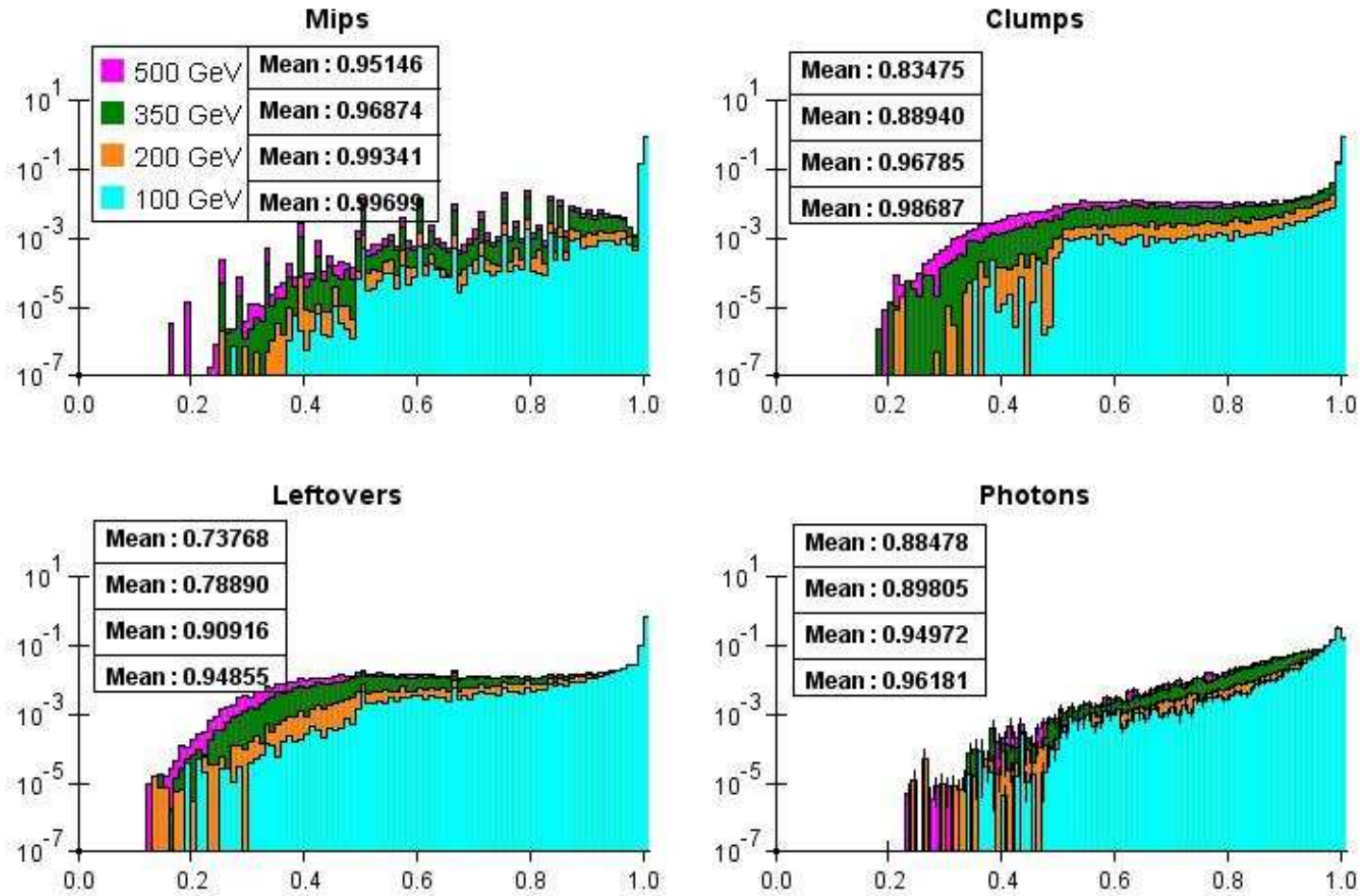
- Energy fractions
- Sub-clusters purities
- Link variables
- Link score
- Shower energy residual
- Shower efficiency and purity

Energy fractions



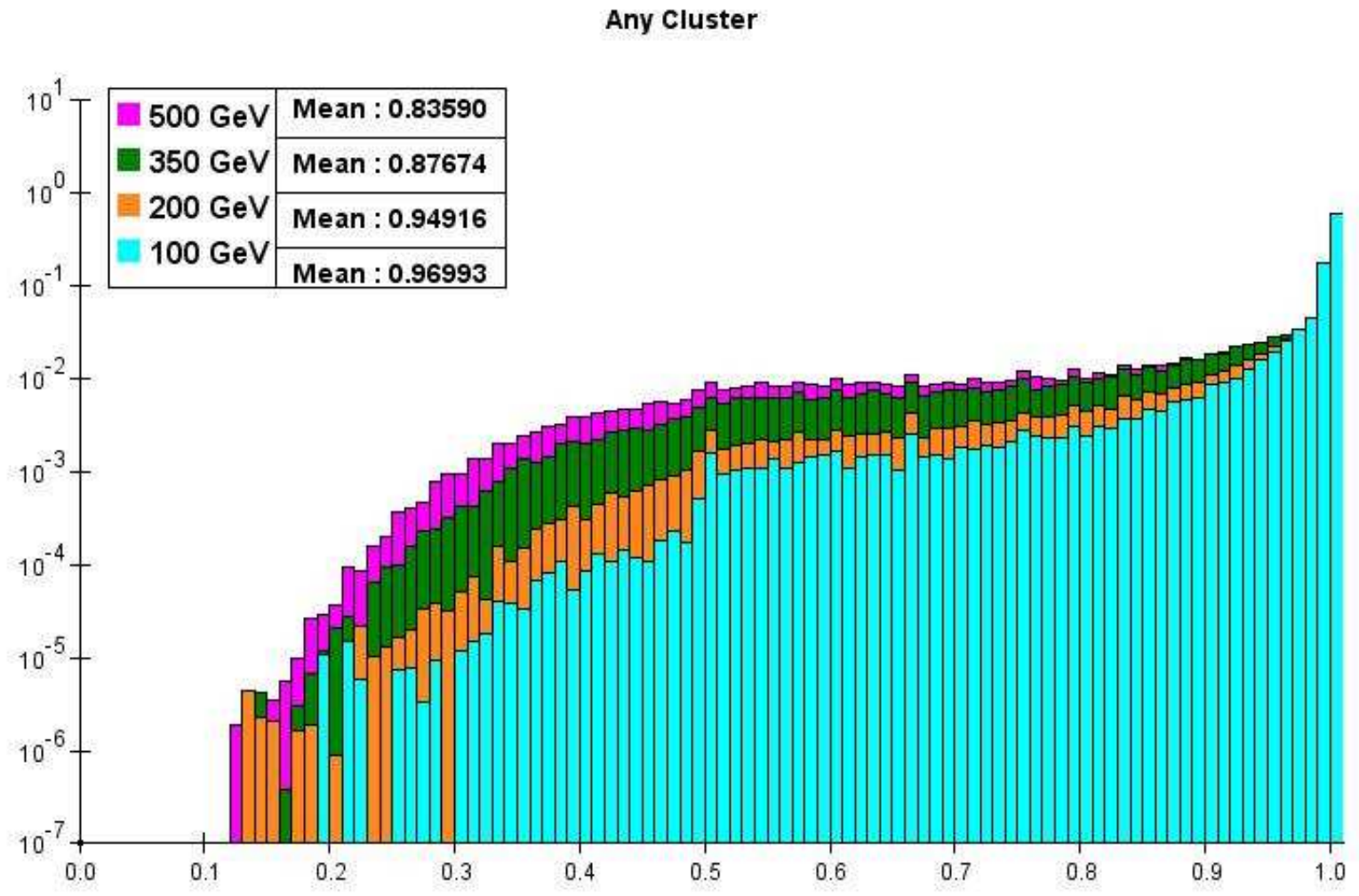
- Photon as predicted at low energy. At high energies, the energy reconstructed as photons is lower because of the overlaps, therefore more photon veto.
- Mips fraction is higher for low energies.
- Leftovers fraction is higher for low energies (low global density).

Sub-clusters purities

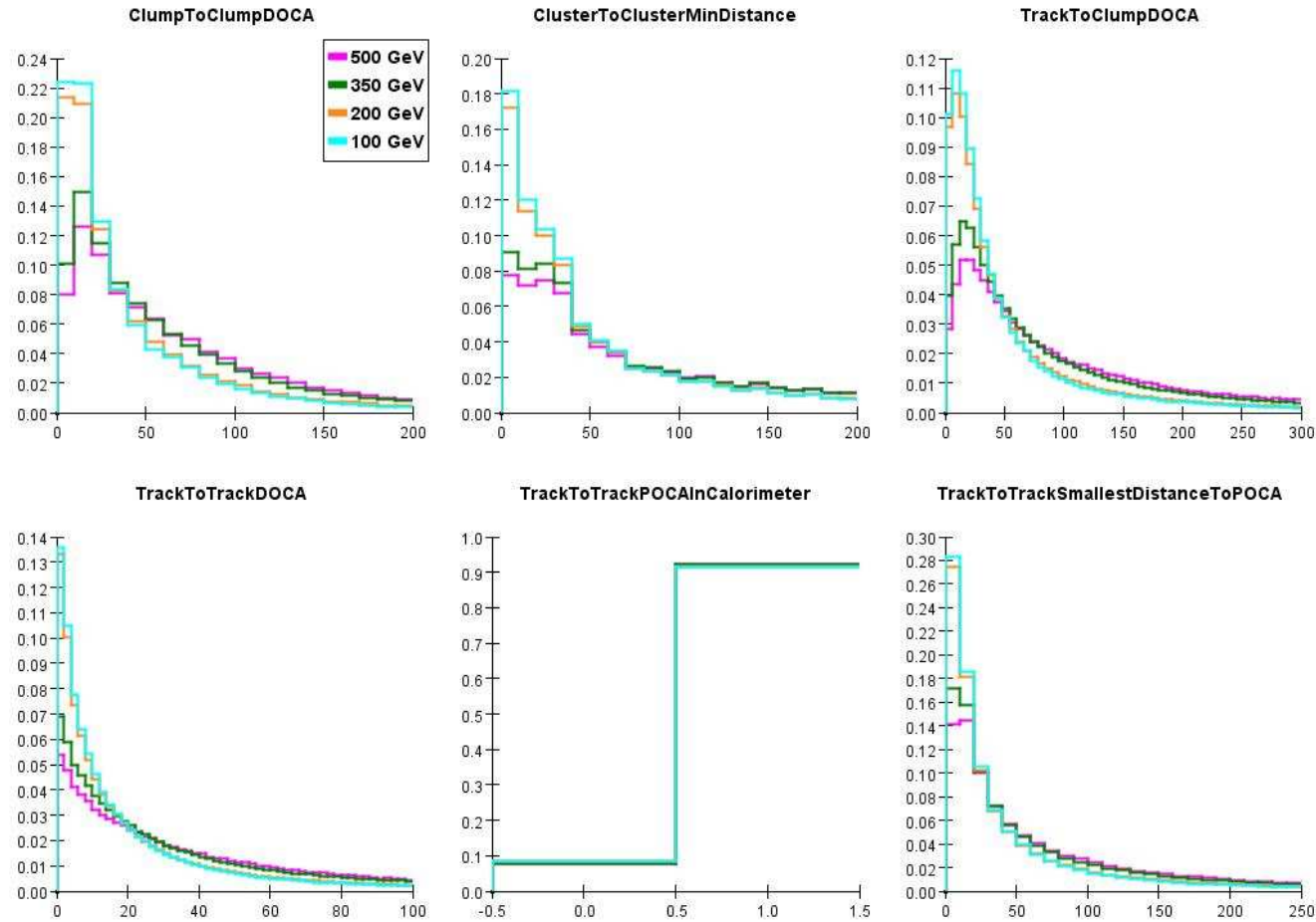


As expected the purity increase when energy decrease (less overlaps at low energy).

All sub-clusters purities

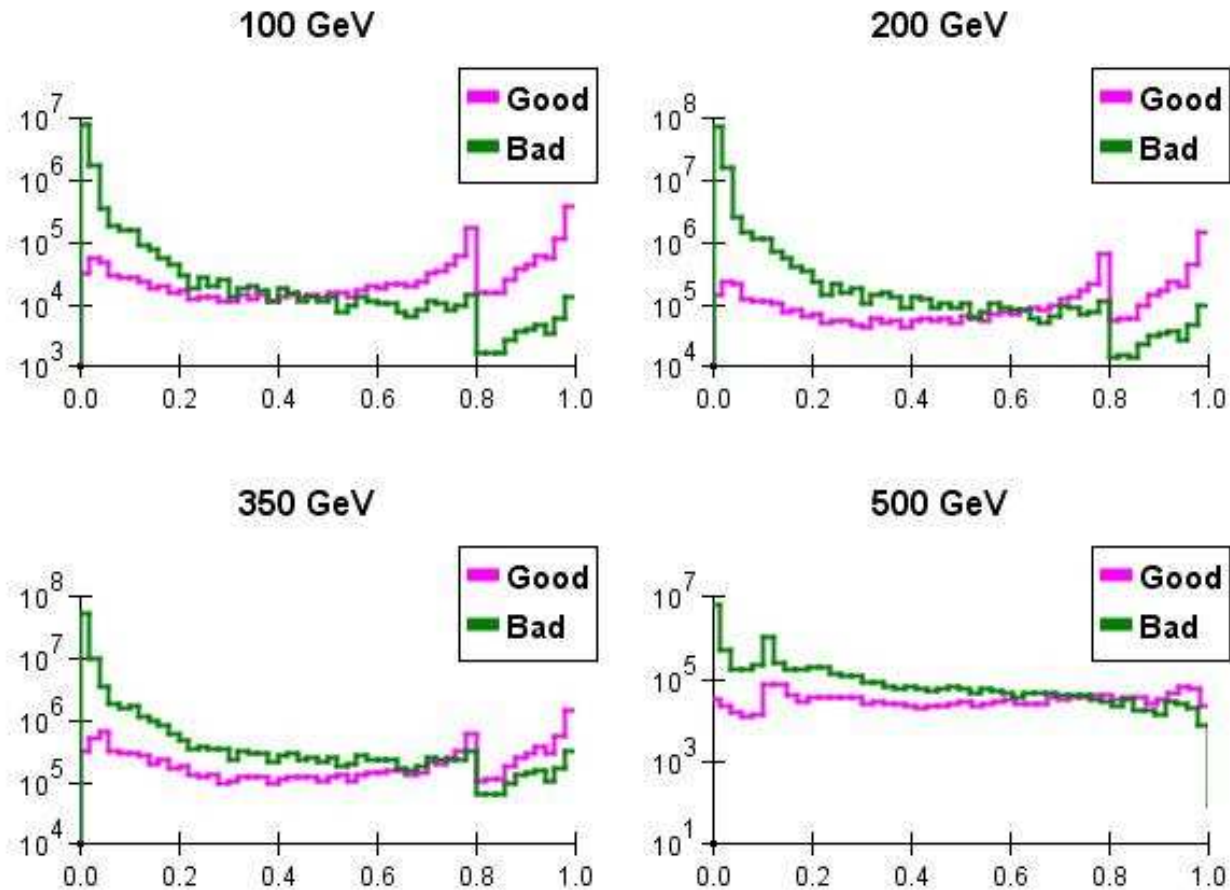


Link variables



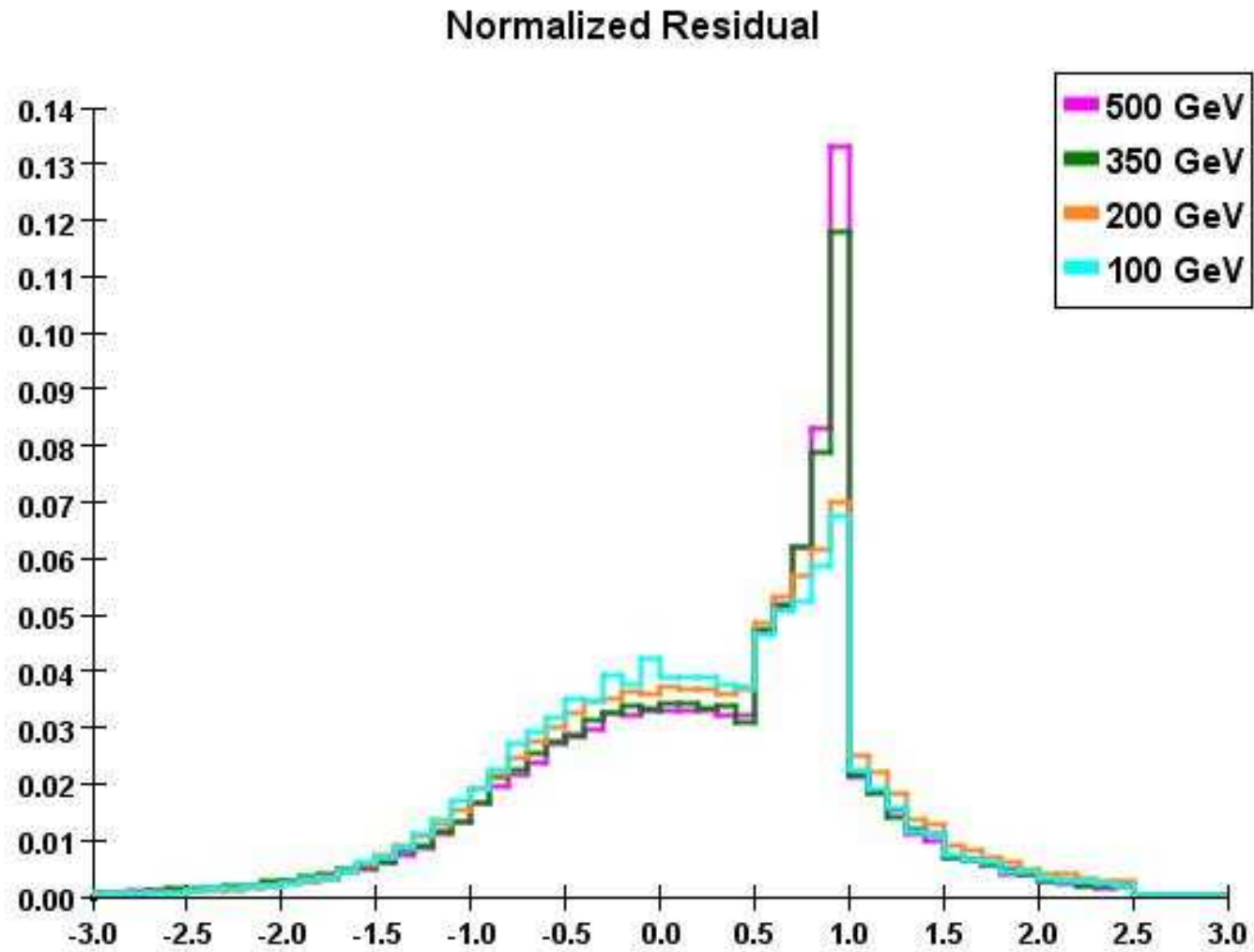
At high energy where the shower is large, links between sub-clusters at opposite side of the same shower are background-like. Therefore, less discrimination power.

Link score

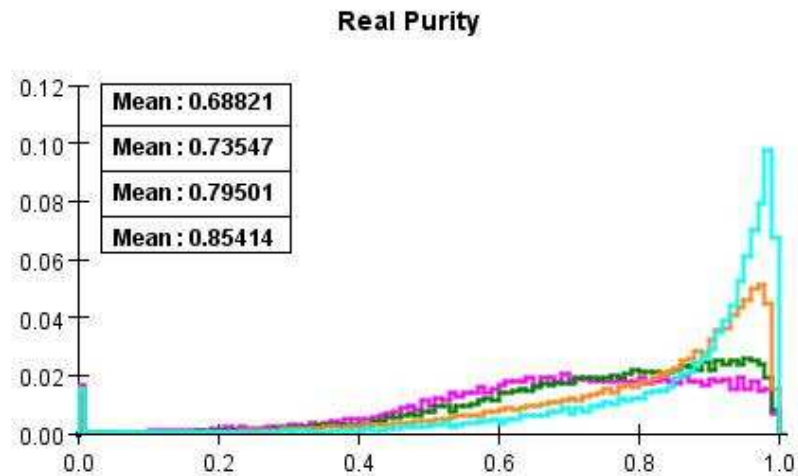
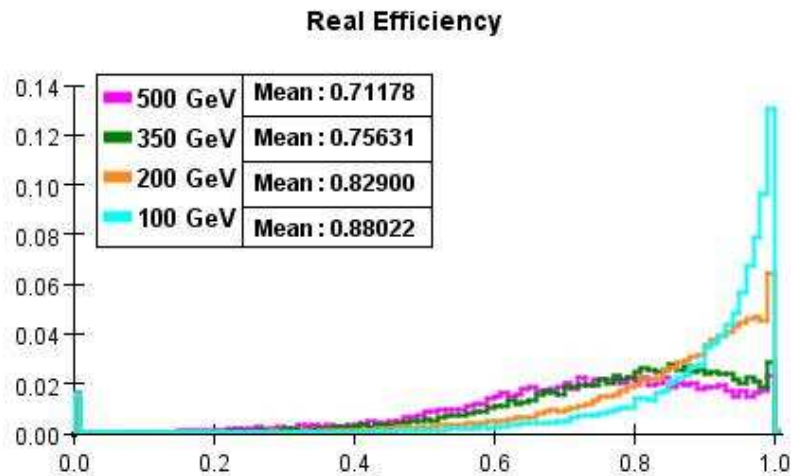
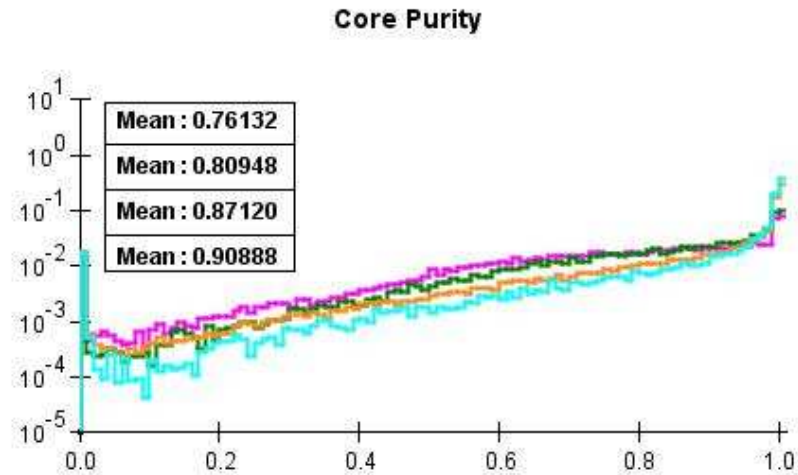
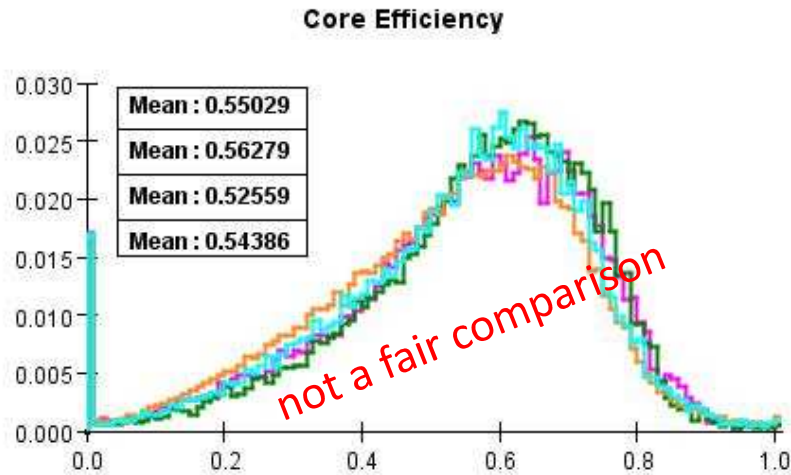


At high energy where the shower is large, links between sub-clusters at opposite side of the same shower are background-like. Therefore, less discrimination power.

Shower energy residual



Shower efficiency and purity



Conclusion

Starting from $\sqrt{s} = 350$ GeV, the overlapping showers cause problems for the PFA in many aspects.

Next step: I will work on the improvement of the scoring.