

Comparison of Jet Algorithms

GoodRun list V6	run 138815 - 184456	395 pb
gjt10d gjt20d gjt30d gjt40d	run 138425 - 179104	275 pb
gjt10e gjt20e gjt30e gjt40e	run 179463 - 186598	178 pb
Total		453 pb
Used		418 pb

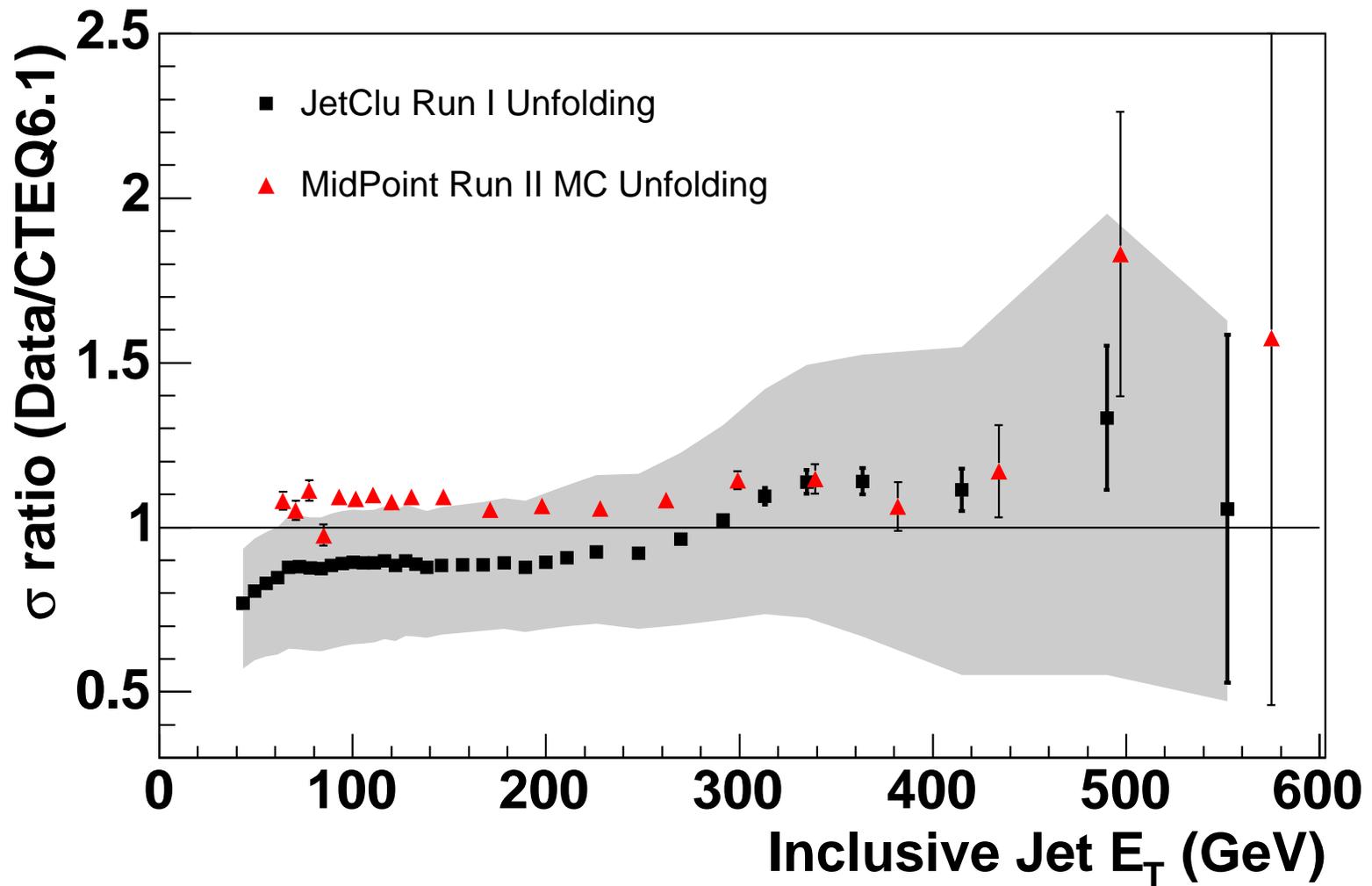
Core components CLC, L1, L2, L3, CAL, COT
Data processed using 5.3.1

MC Pythia 4.9.1

mc_Pythia_pdf_CTEQ5L.tcl

mc_Pythia_underlying_event_A.tcl

Comparison of MidPoint (MC unfolding) and JetClu (Run I Method)



Midpoint has correction for underlying event
Using different run ranges...

The corrected cross section determined using JetClu and the Run I unsmearing does not agree with the results using MidPoint and the MC unfolding

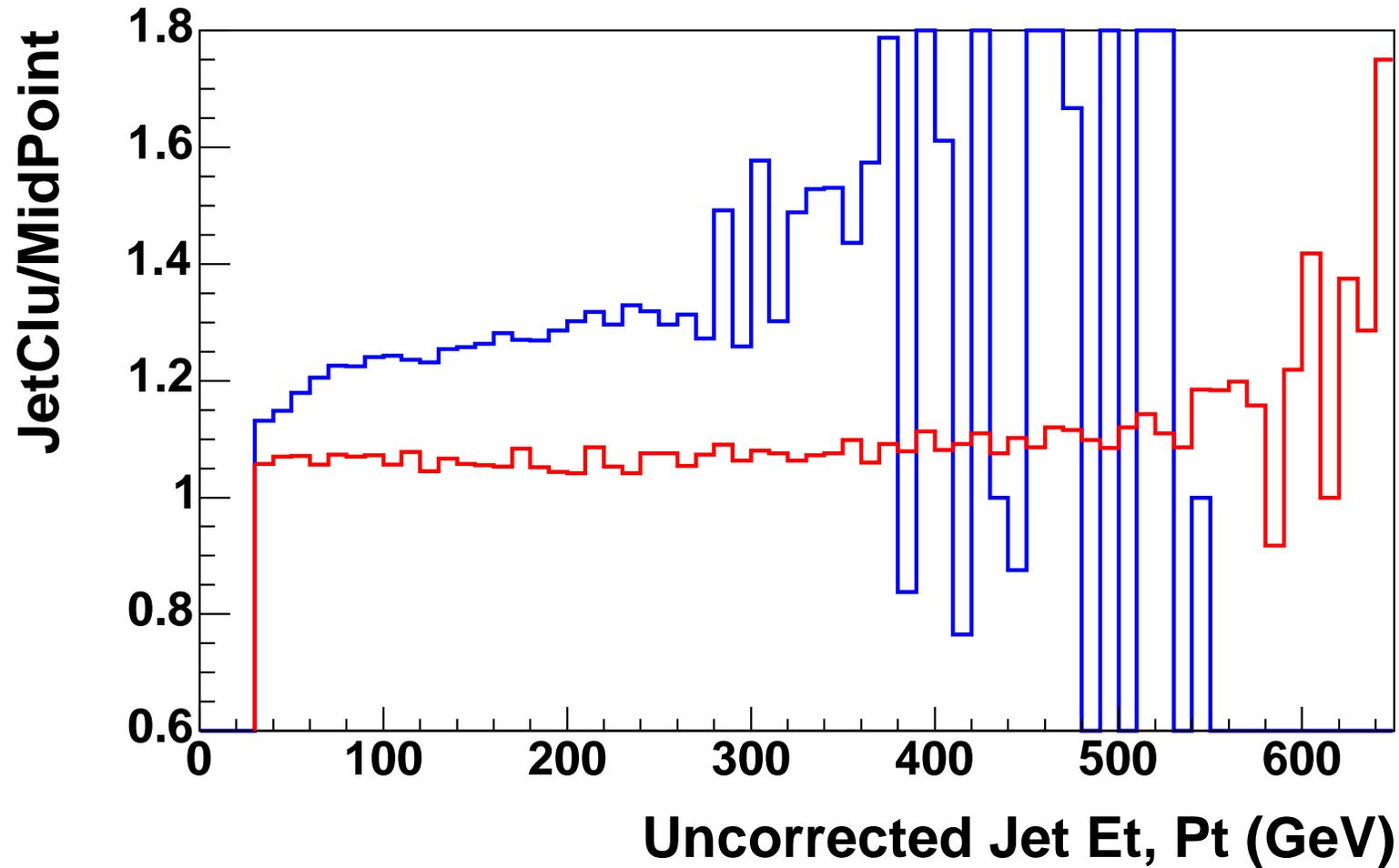
→ *There is a shape difference at low E_T*

→ *There is a kink in the data at around 260 GeV*

Is the difference due to:

- Unfolding method
- Jet Algorithm
- MC Simulation (response used for correction)

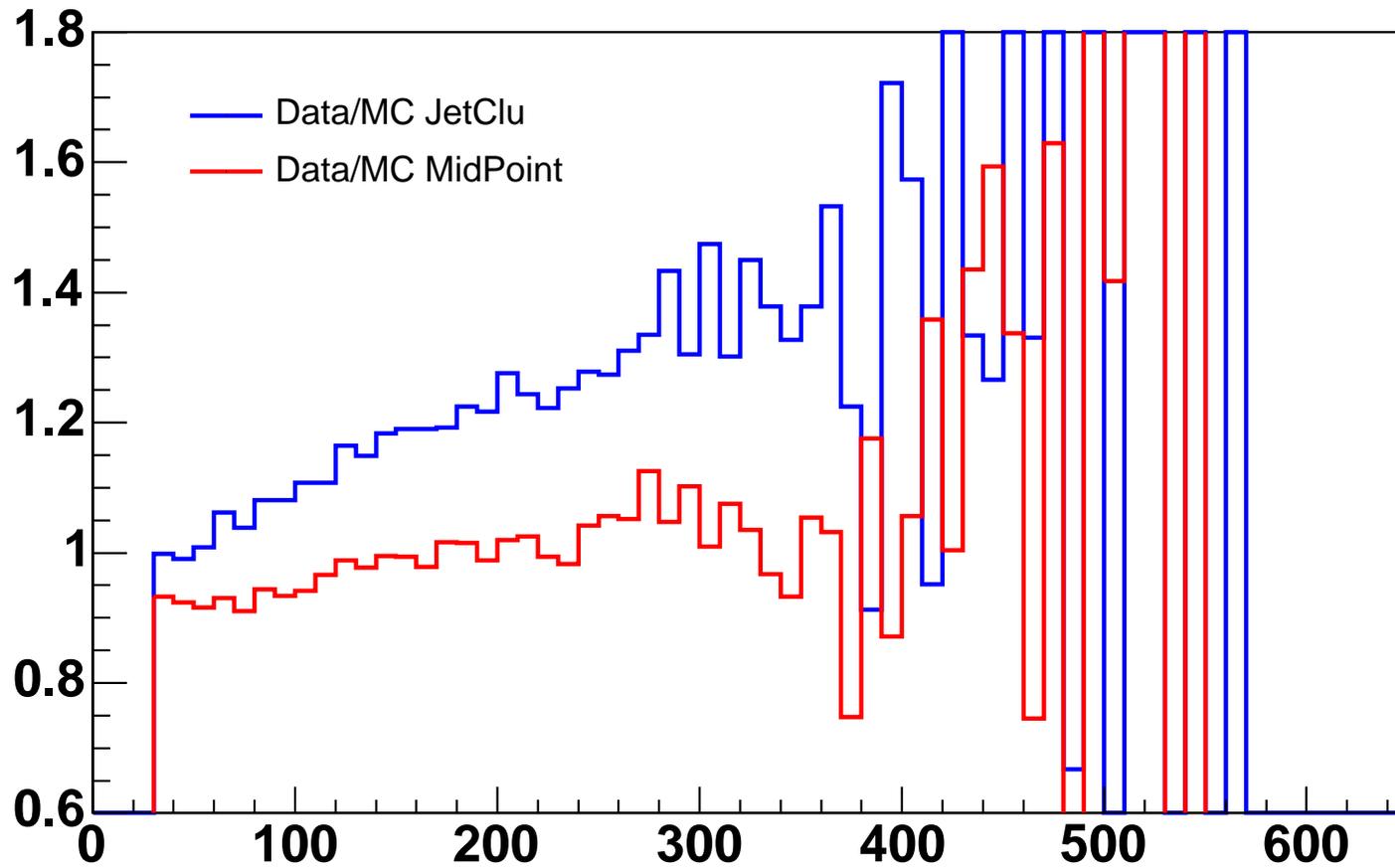
Ratio of $\text{JetClu}(E_T)/\text{MidPoint}(p_T)$ for Data (blue) and MC (red)



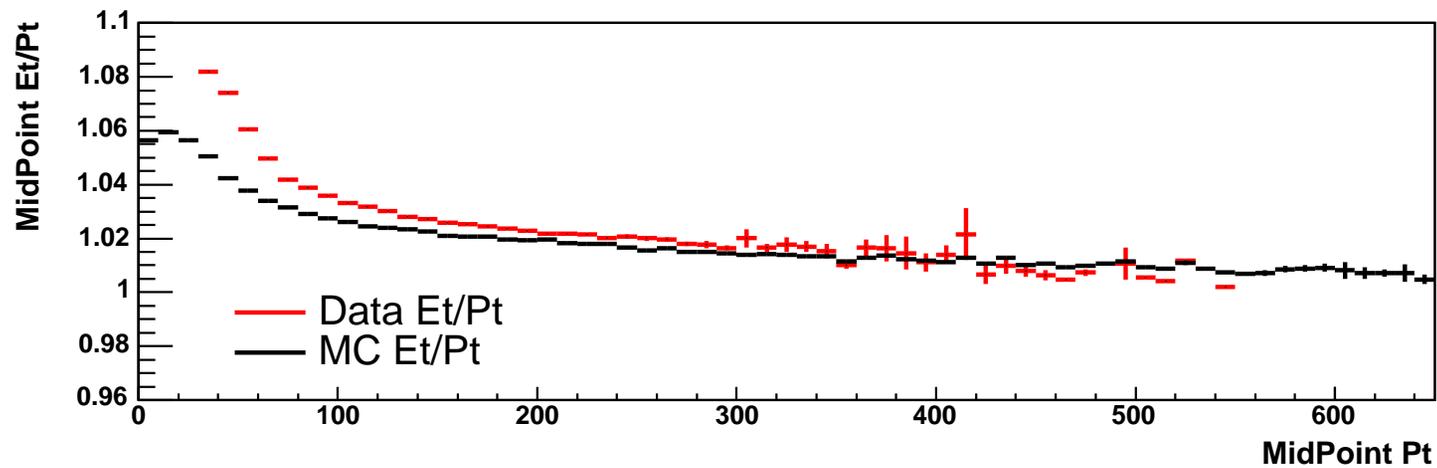
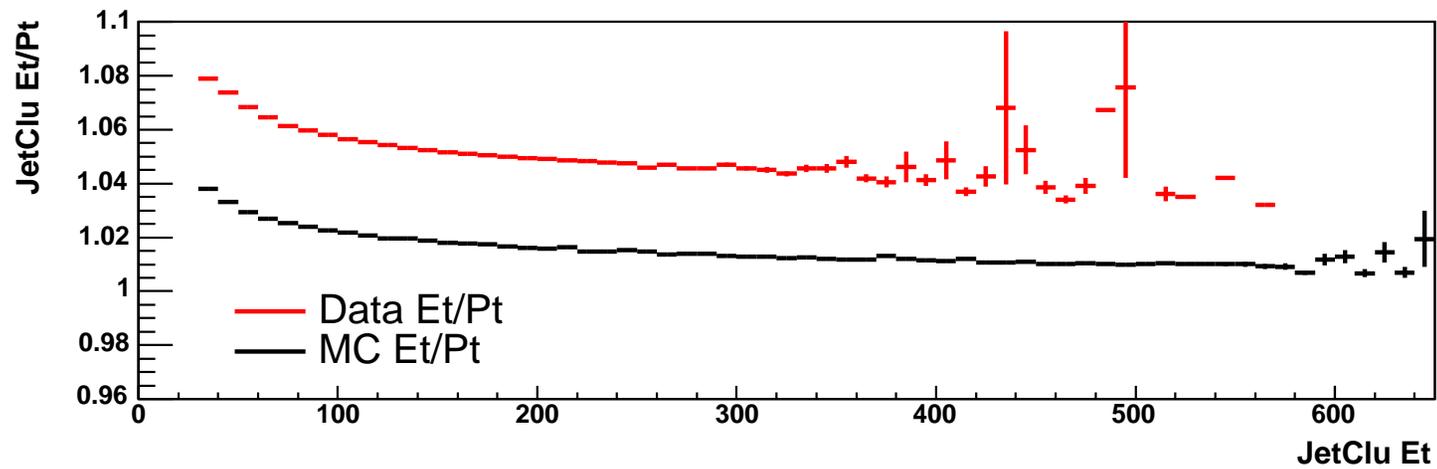
Looking at the raw distributions...

Ratios look different for MC and Data

Ratio of Data/MC for JetClu(E_T) and for MidPoint(p_T)

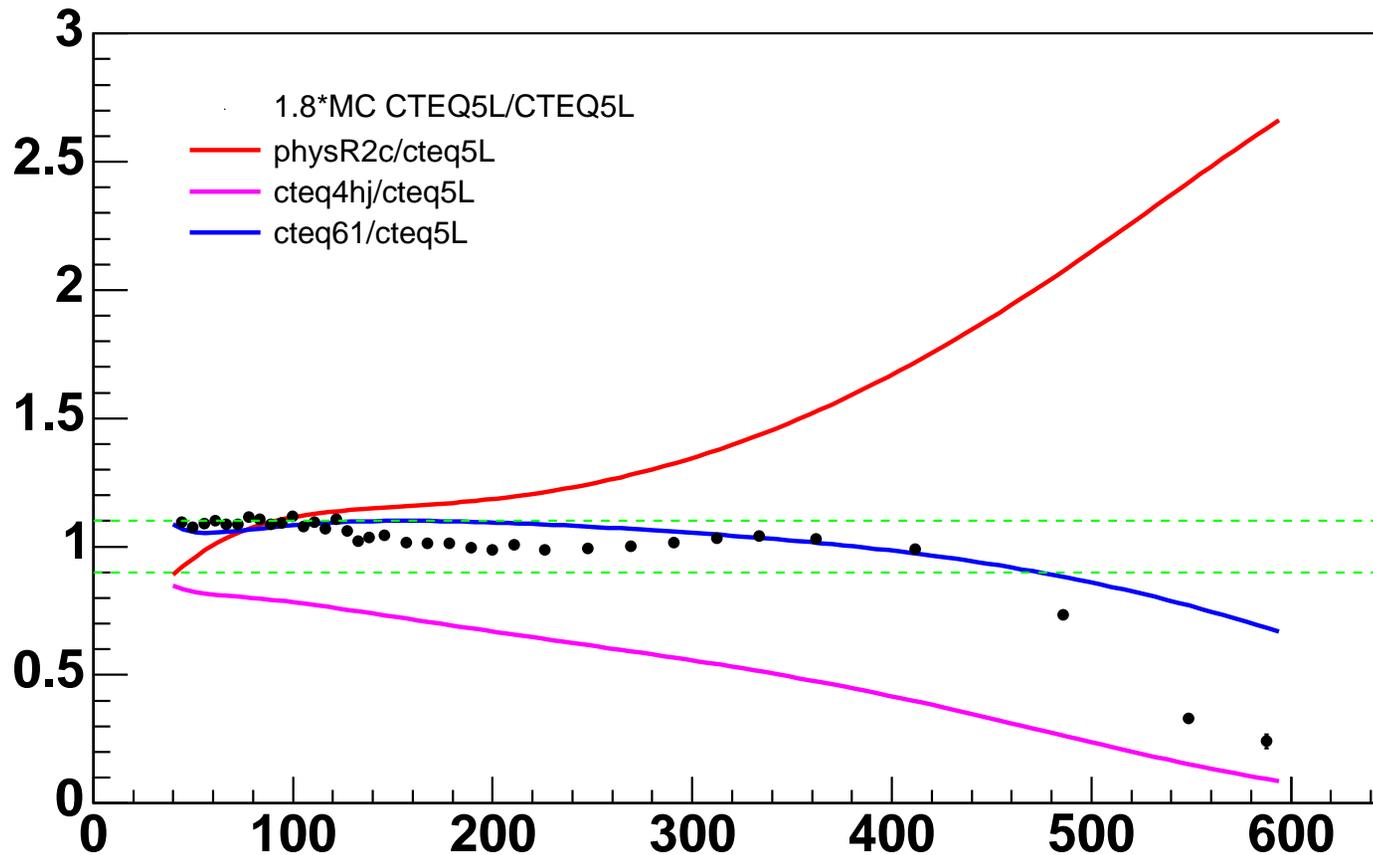


Et/pT ratio for JetClu and MidPoint



~ 3% constant shift between Data and MC for JetClu
Ratio diverges at low E_T for MidPoint

Does the Run I unsmearing introduce any features in the corrected distribution?



Unsmearred MC is relatively flat up to 400 GeV

High E_T points are dropping

Don't see a turn over at low E_T

Summary

Looked at raw distributions

→ We see the same shape difference between JetClu and MidPoint that we see in the corrected cross section in the raw data.

The low E_T turn over appears in JetCLu but not MidPoint

The MC does not reproduce the differences we see in the Data between JetClu and MidPoint

Used the Run I unsmearing to unfold the MC.

→ Did not cause a turn over at low E_T

→ High E_T points were lower than expected