Generic Dijet MC sample, take III: btoprb validation

- btopra: Pythia 6.216, QCD $2 \rightarrow 2$, pT>40 GeV (Jet50), EvtGen
  EvtGen version: 1.42 2006/06/09
  MSTJ(11)=4 (fragmentation function)
  Min bias overlayed
  Parton cut: $|\eta| < 2$
  Includes wrong calibrations (runs 160050-174656+...)
  Black distributions

- btoprb: Pythia 6.216, QCD $2 \rightarrow 2$, pT>40 GeV (Jet50), EvtGen
  EvtGen version: 1.42 2006/06/09
  MSTJ(11)=4 (fragmentation function)
  Min bias overlayed
  No Parton cut
  Calibrations OK
  Red distributions
  1/fb run range (5M events) presented here, to be extended to 1.2/fb

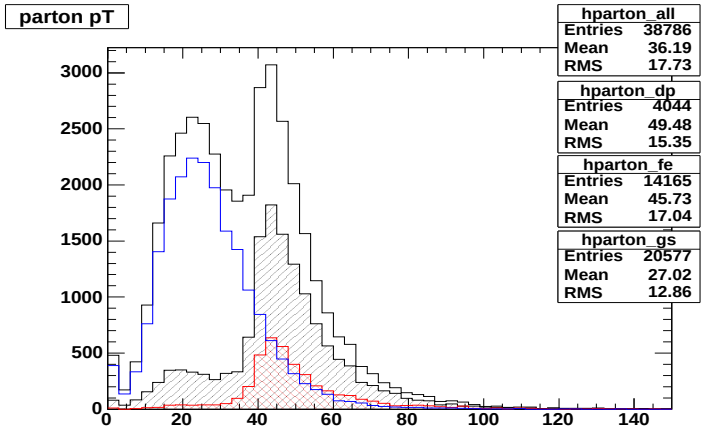
- Event HF composition before tagging for Jet 50 (Gen 6 and Gen 5):

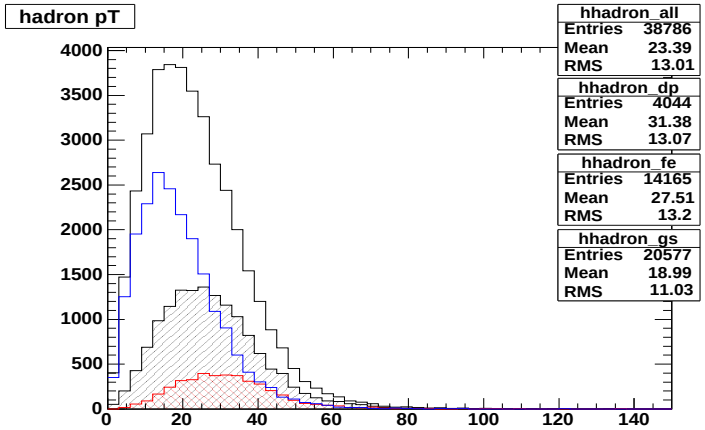
Require 1 jet>50 GeV				
type	DP (%)	FE (%)	GS (%)	TOT (%)
btopra 2M events				
b	0.41 ± 0.01	1.91 ± 0.03	2.46 ± 0.03	4.78 ± 0.07
c	0.53 ± 0.01	3.42 ± 0.04	7.31 ± 0.06	11.26 ± 0.11
jqcd2f 477k events (Pythia QCD 2→2, 6.216, QQ, pT>40 GeV)				
b	0.34 ± 0.02	1.79 ± 0.05	2.49 ± 0.06	4.63 ± 0.13
c	0.43 ± 0.02	3.05 ± 0.06	7.29 ± 0.10	10.78 ± 0.20
btoprb 5M events				
b	0.35 ± 0.01	1.81 ± 0.02	2.46 ± 0.02	4.63 ± 0.04
c	0.45 ± 0.01	3.24 ± 0.02	7.31 ± 0.03	11.02 ± 0.06

- Better agreement in HF composition between Gen 5 (jqcd2f) and btoprb (only sig diff is FE c): OK

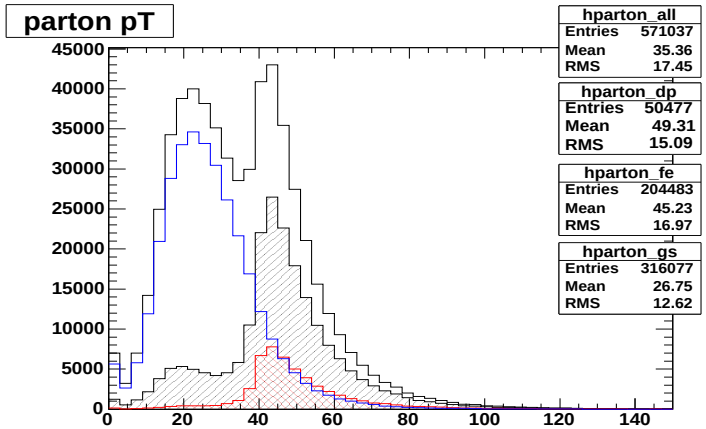
- Parton pT different HF processes (red: DP, black: FE, blue: GS)

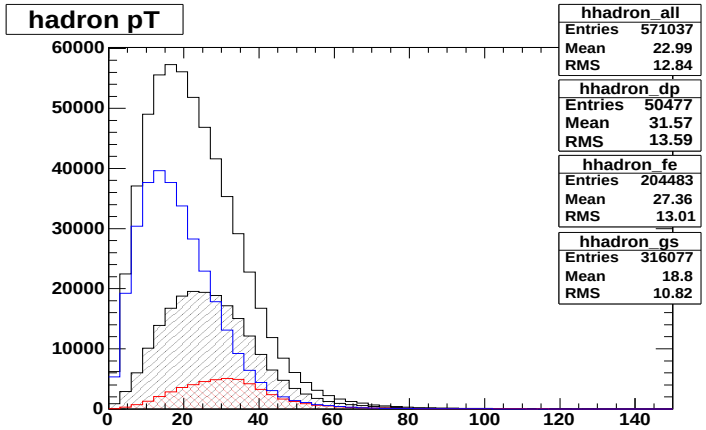
btopra (Pythia, gen 6)





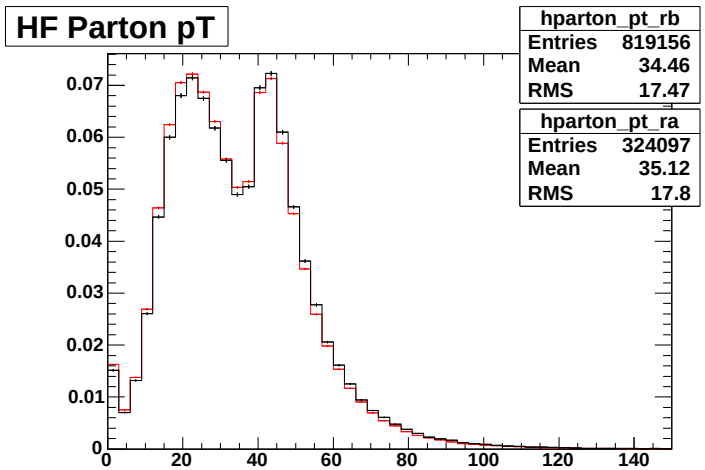
btoprb (Pythia, gen 6)

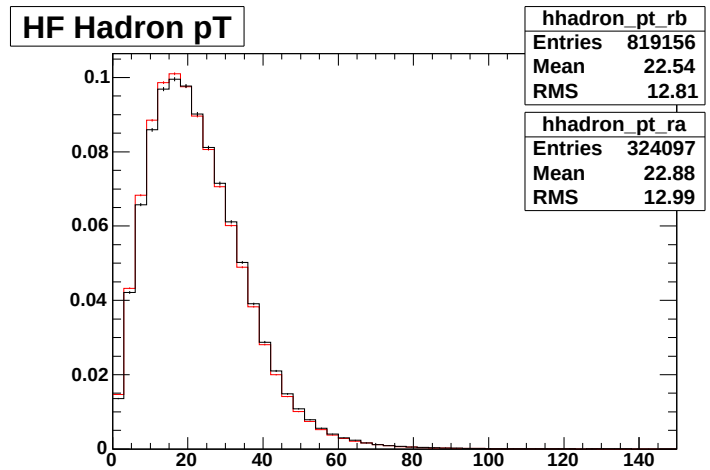


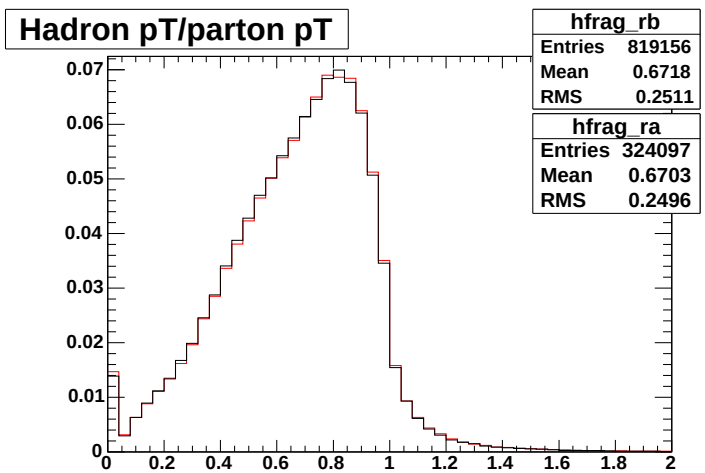


No surprise here...

- Fragmentation

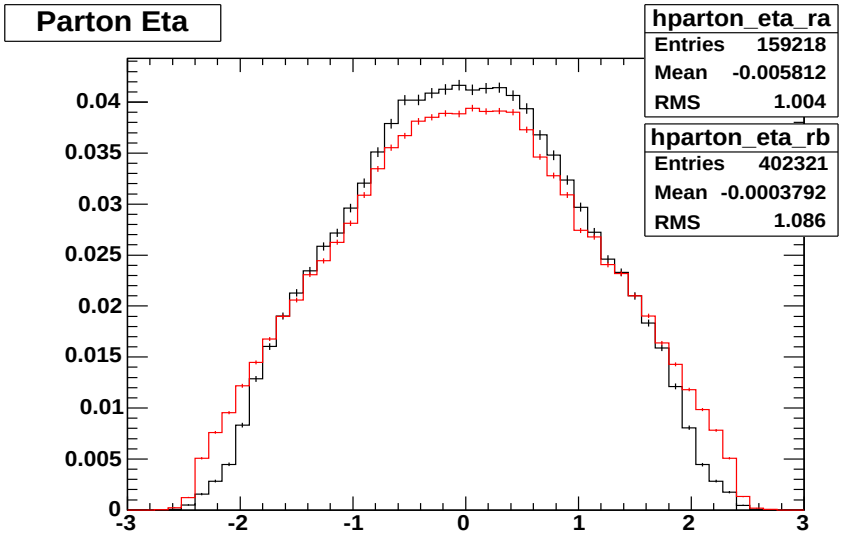






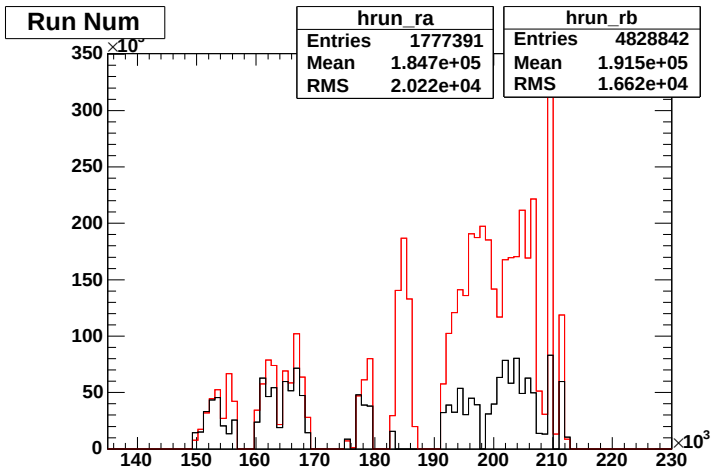
Fragmentation of new MC OK.

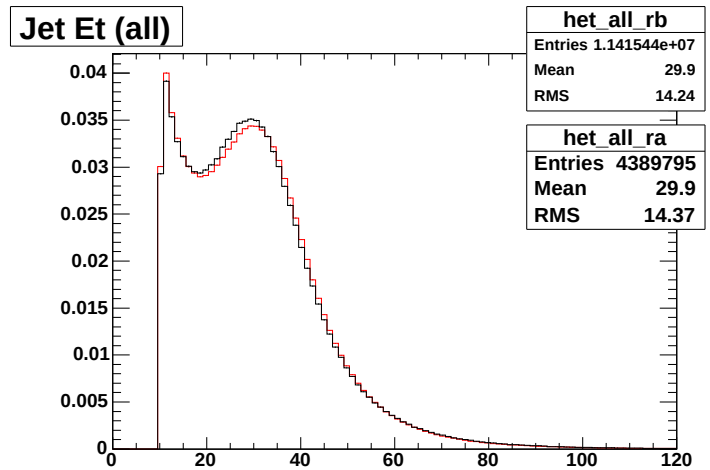
- Parton Eta:

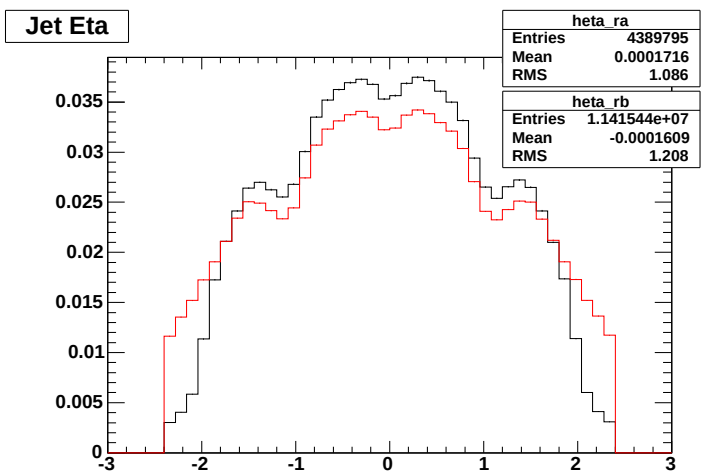


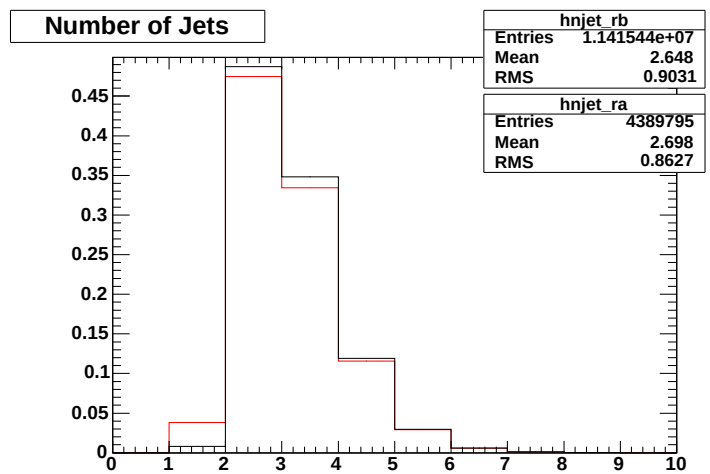
- $|\eta| < 2.0$ cut on partons removed: OK

- <u>Reconstruction level</u>: Run Num, Jet Et, Jet Eta, Jet Multiplicity

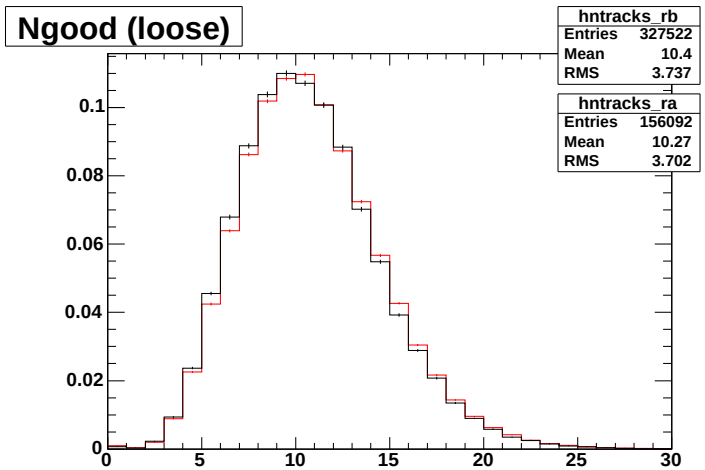


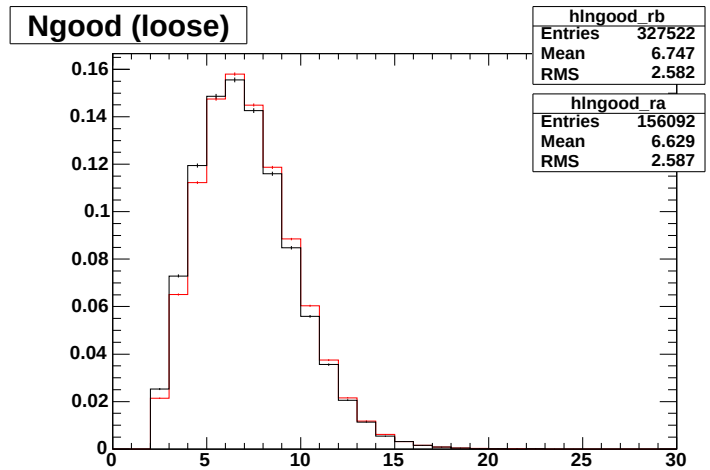






- <u>Reconstruction level</u>: Jet Ntrk, Jet LNgood

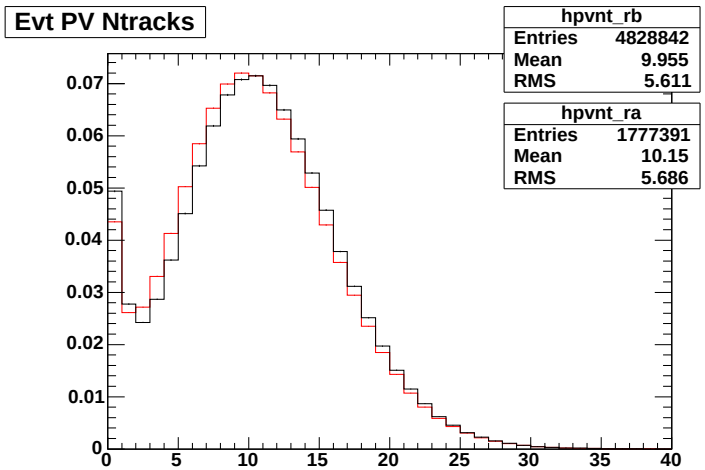


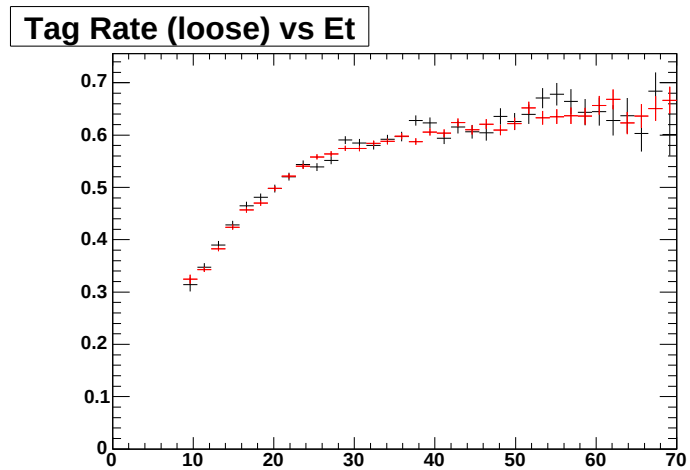


Because of different η cuts expect differences between samples

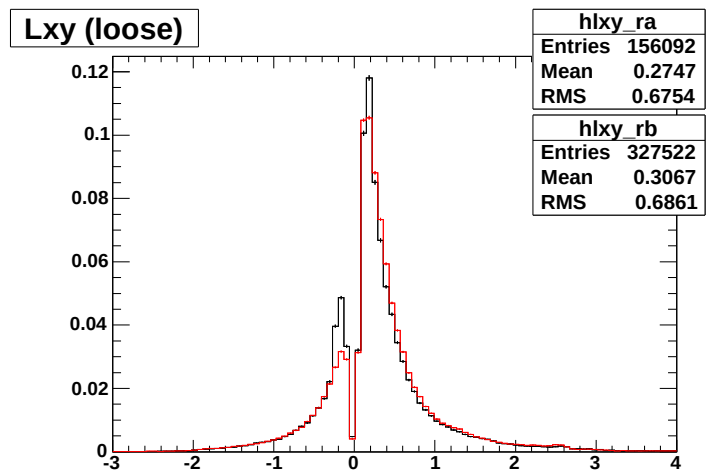
More tracks in btoprb (more forward)? And more jets too?

- Num of tracks in PV, tag rates (b), Lxy

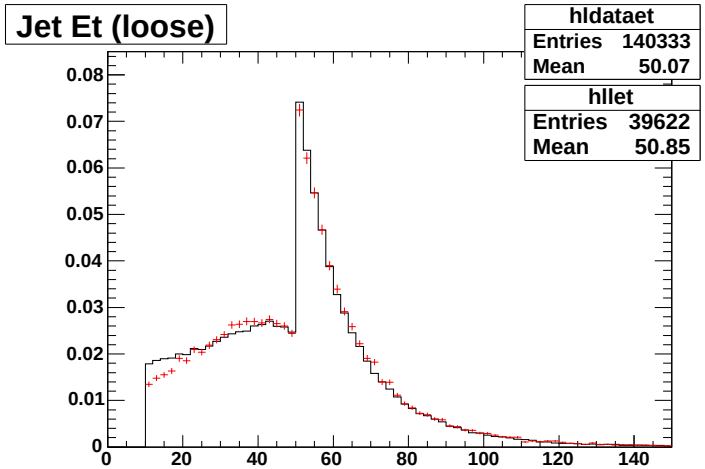


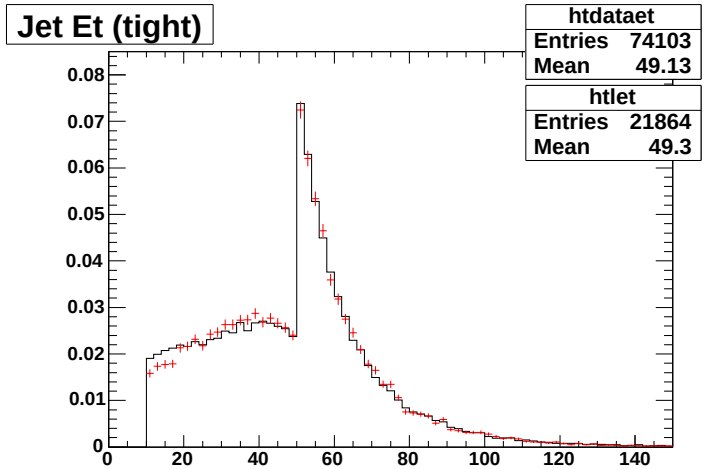


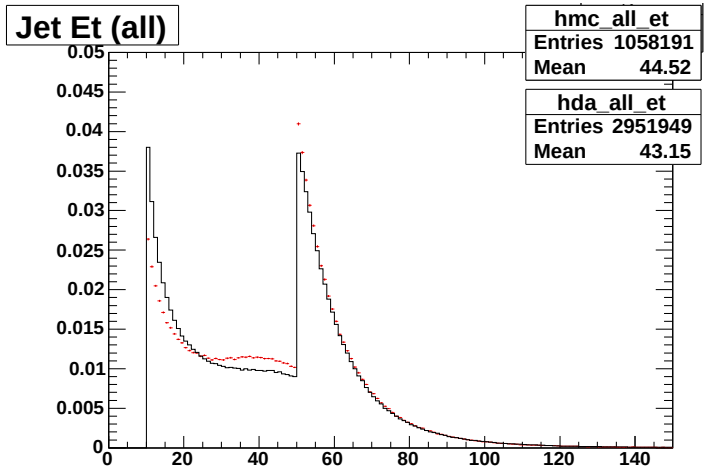
Diff in Lxy due to calibration bug in btopra



- Comparison to data: Jet Et (tagged jets, all jets)



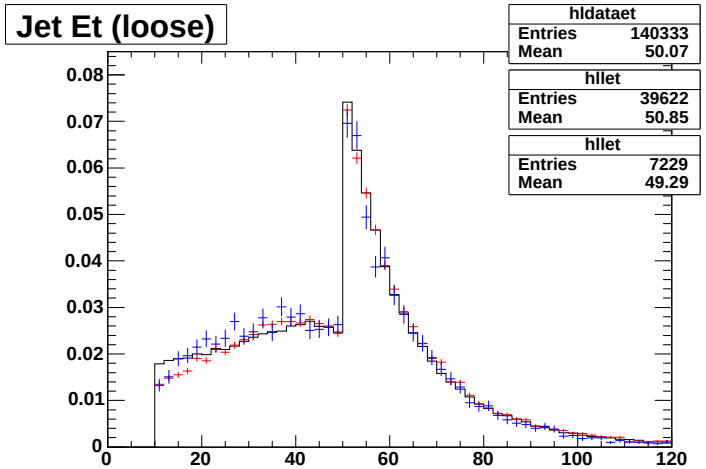


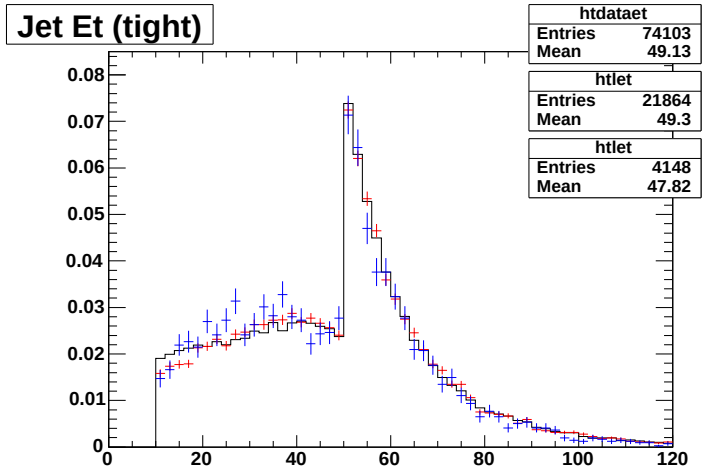


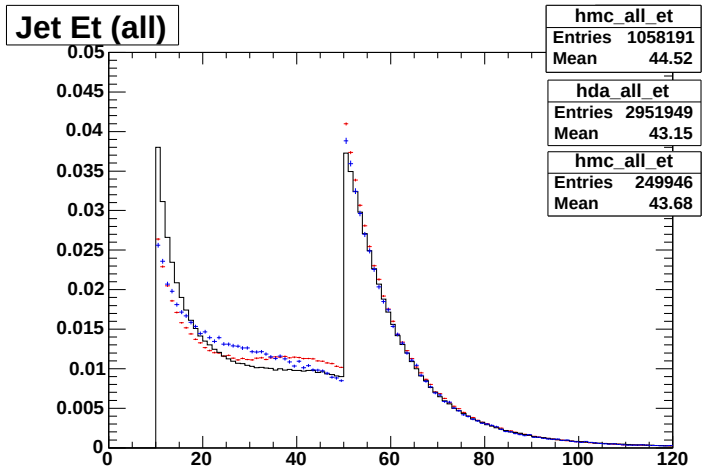
Red is btoprb, black is Jet 50 data.

More low Et jets in data.

- Comparison to data: black (Jet 50 data), red Pyhtia (btoprb), blue Herwig (Gen 5, jqcd3h)







Same trend in Herwig (Gen 5).

More gluon splitting in data? (K factor...)

Summary

- ⇒ btoprb (Jet50) done (5M events)
- ⇒ fcdfdata129/export/data2/top/gris/btag_topntuples/btoprb/*.root
- ⇒ Will generate extended run range (for 1.2/fb) Jet 50 sample
  New dataset or add the btoprb?
- ⇒ Jet 20 will follow soon (needed for asymmetry)
- ⇒ Thanks to Andrew for improved MC scripts