

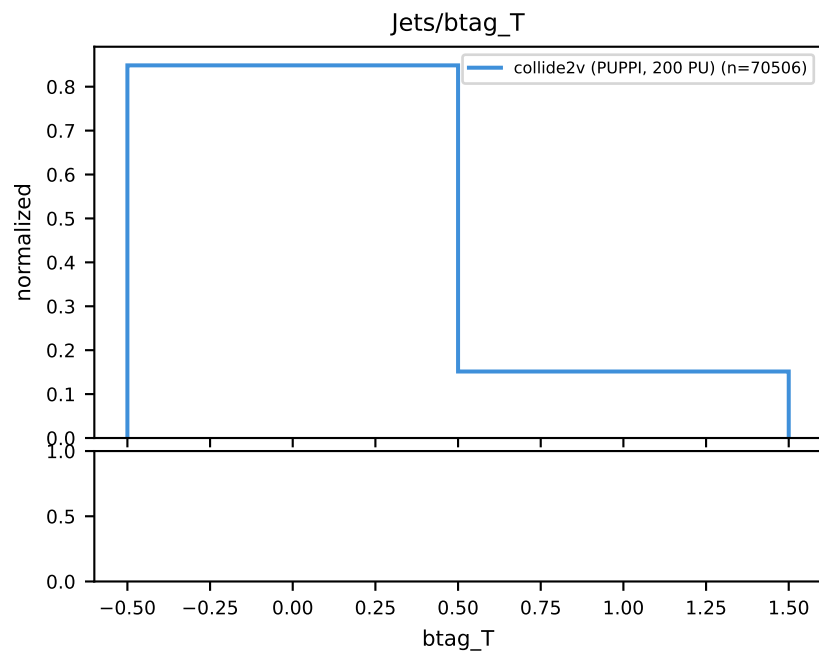
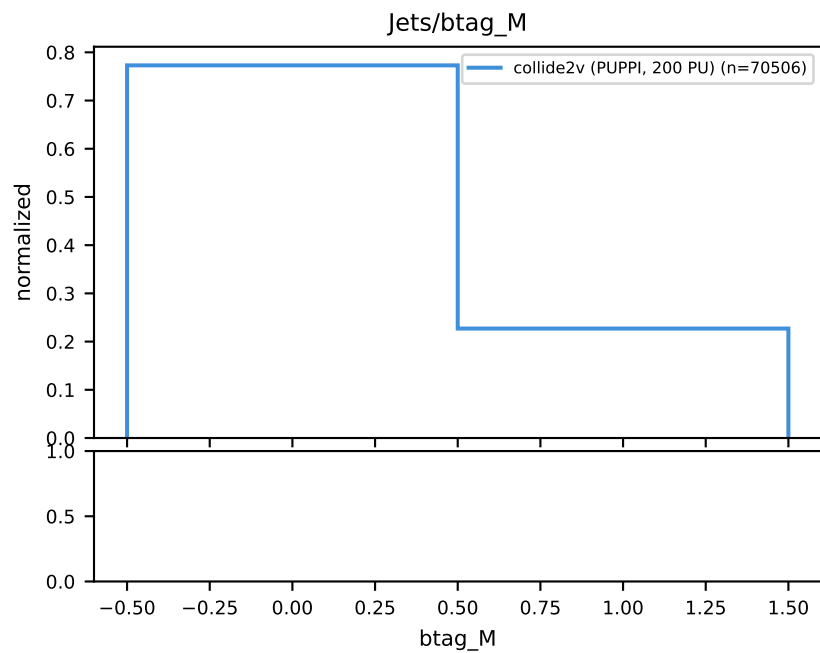
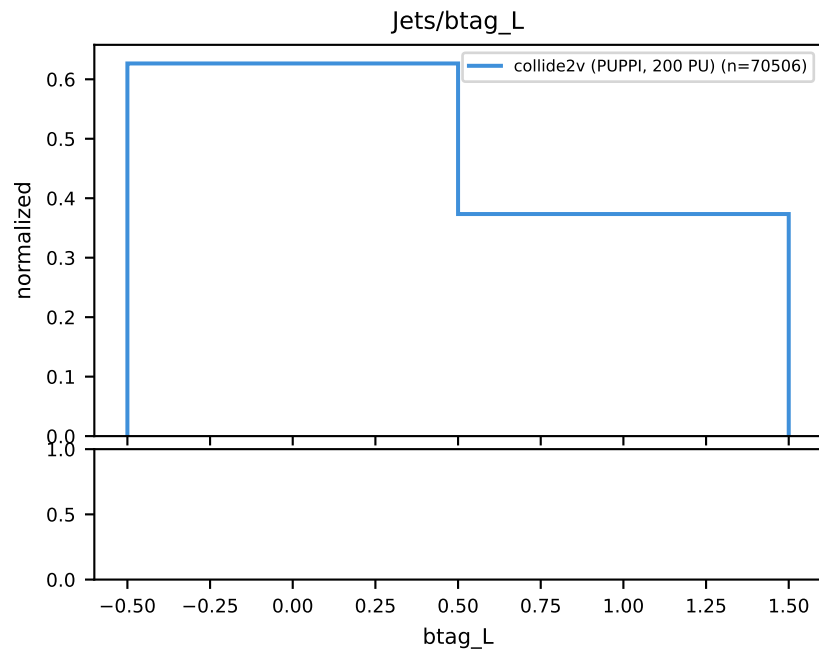
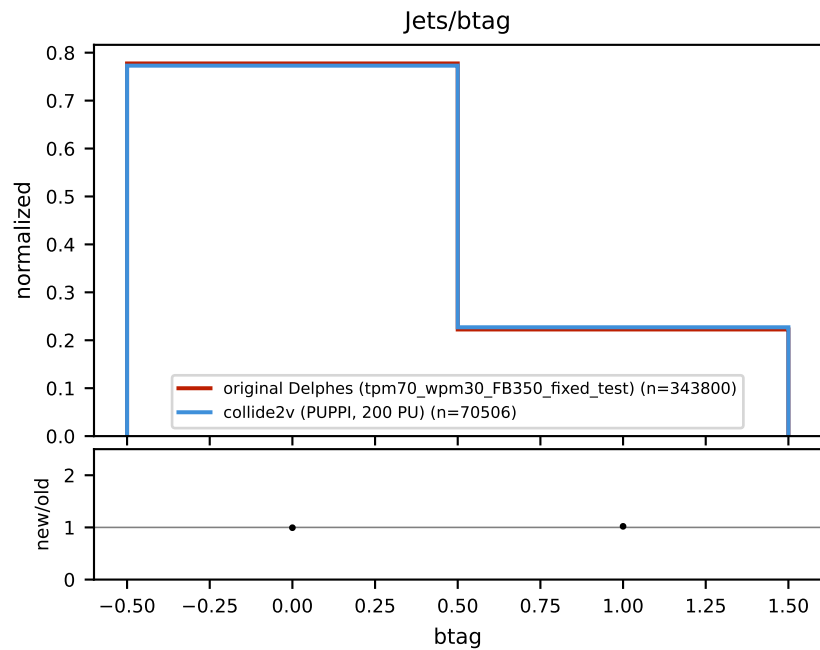
SPATop feature comparison: collide2v vs original Delphes

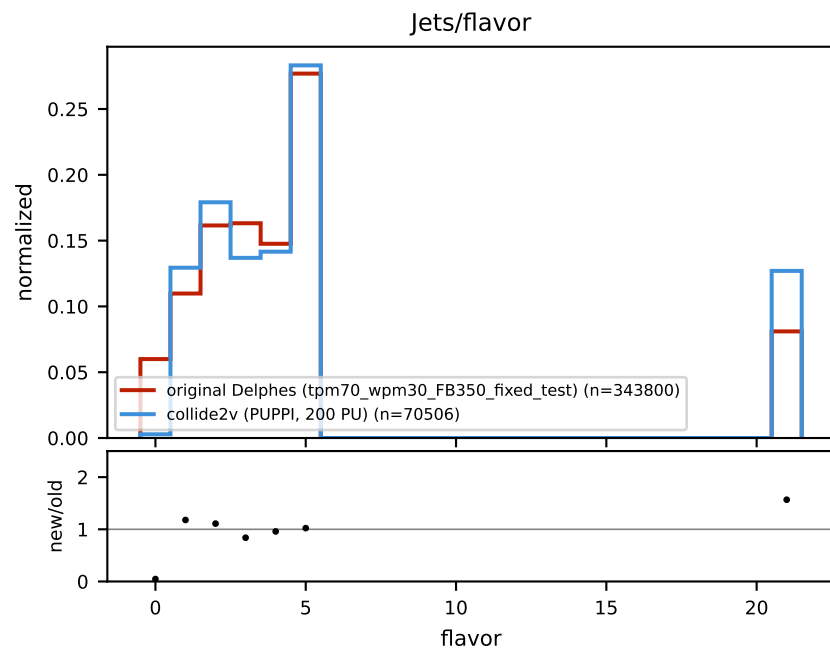
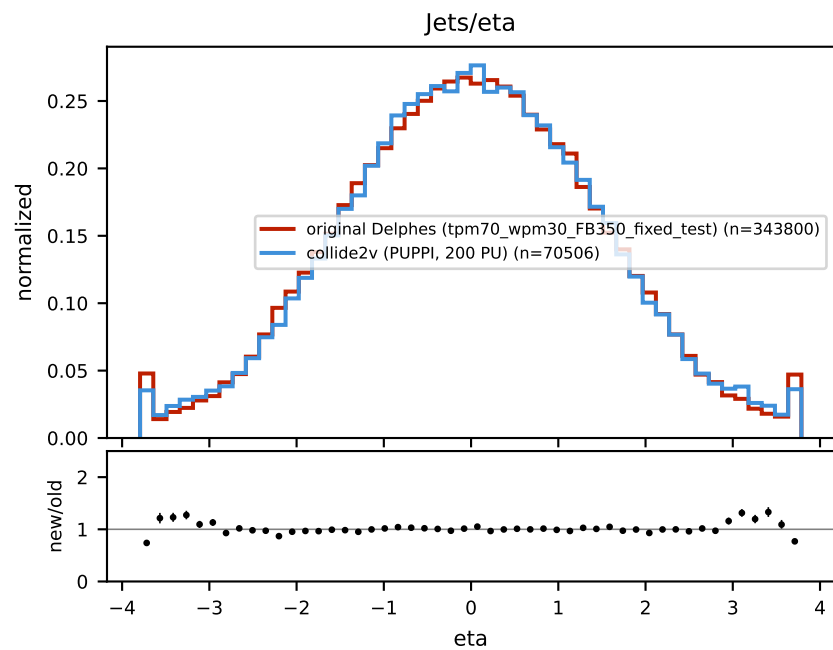
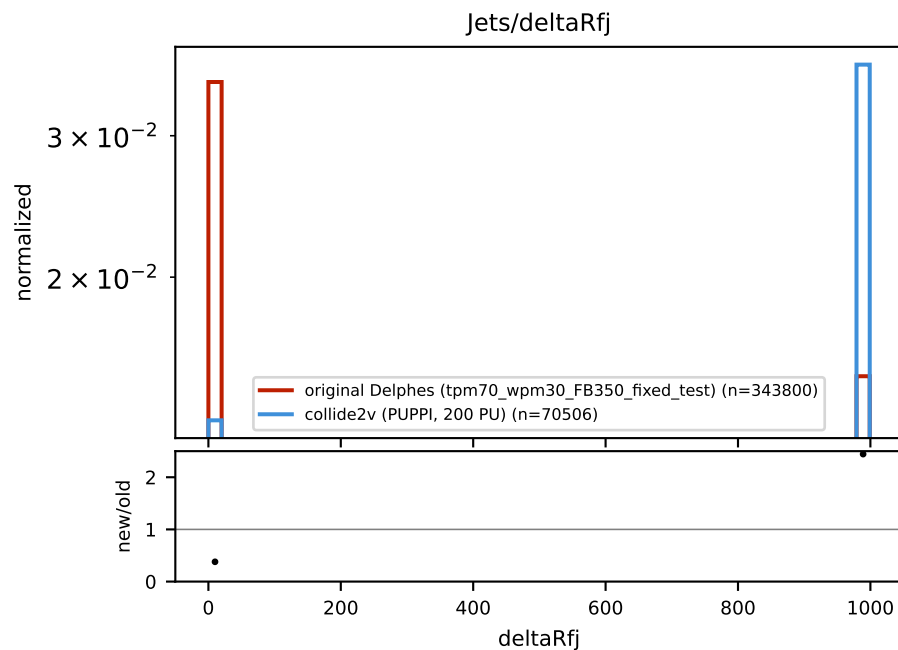
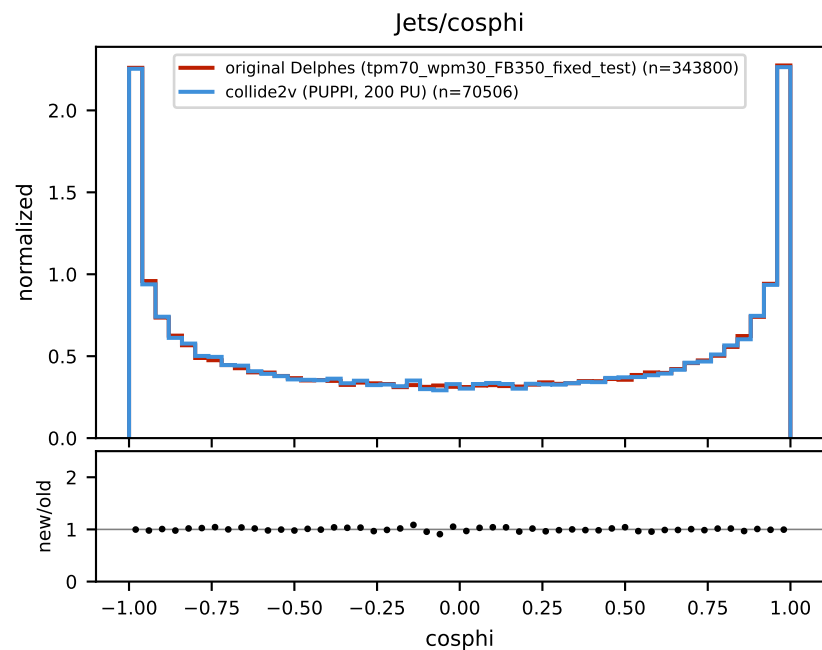
```
new: /traindatavol/collide2v/tt_hadronic_50k_better_n_jettiness/tt_hadronic_training.h5
     events used 10551 of 10551; git_sha b05a2190a55569c801e6aed2d0b08e1731dceaad
old: /traindatavol/spatop/tpm70_wpm30_FB350_fixed_test/all_merged.h5
     events used 50000 of 187348; attrs []
```

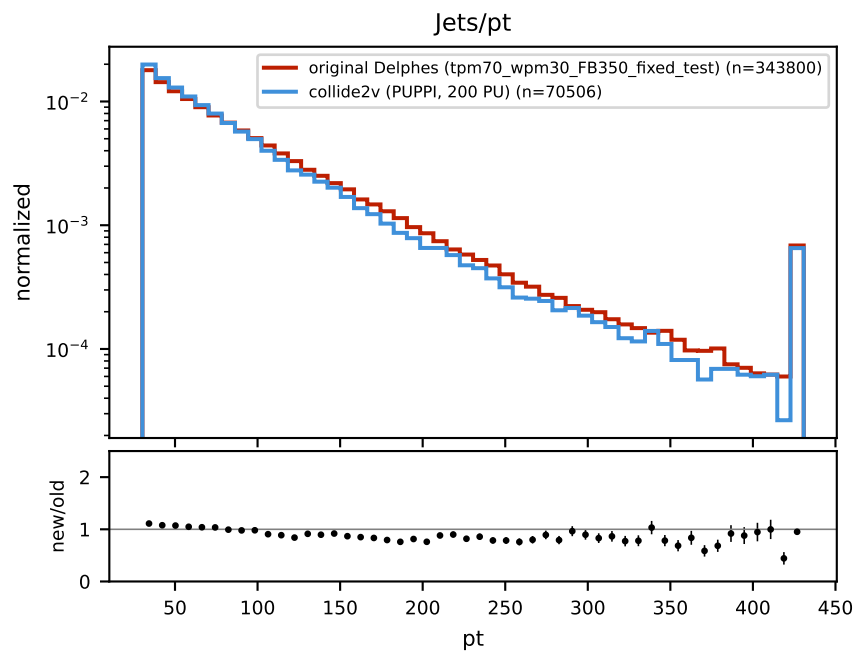
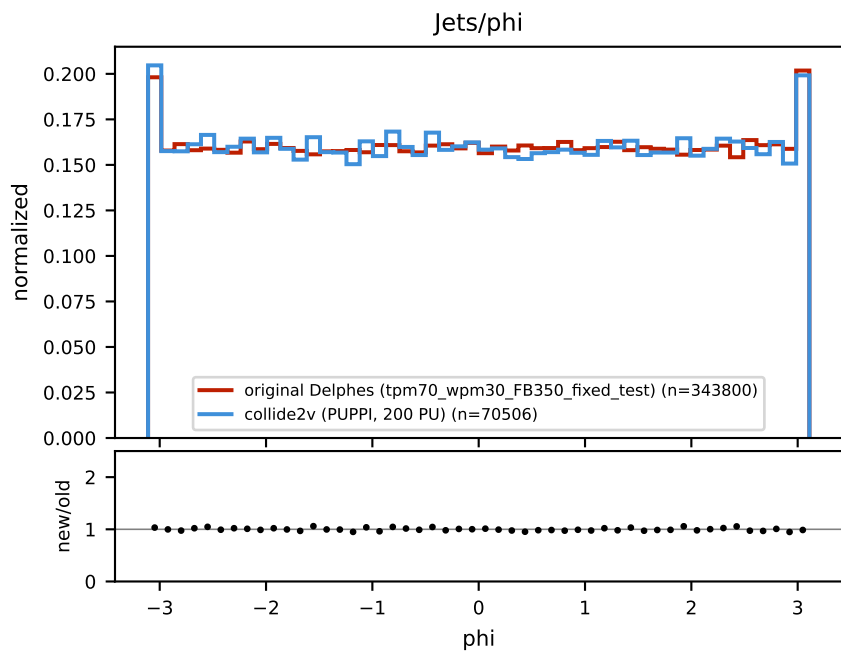
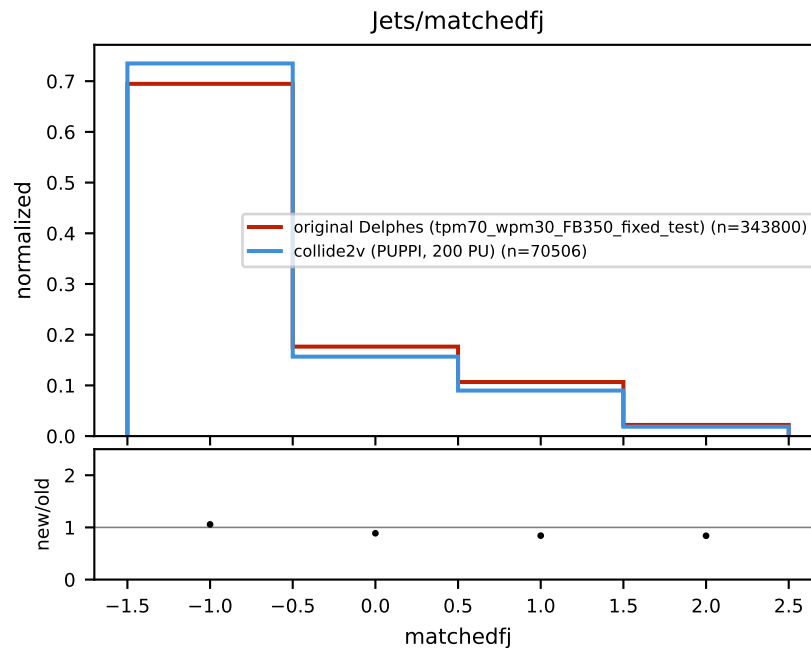
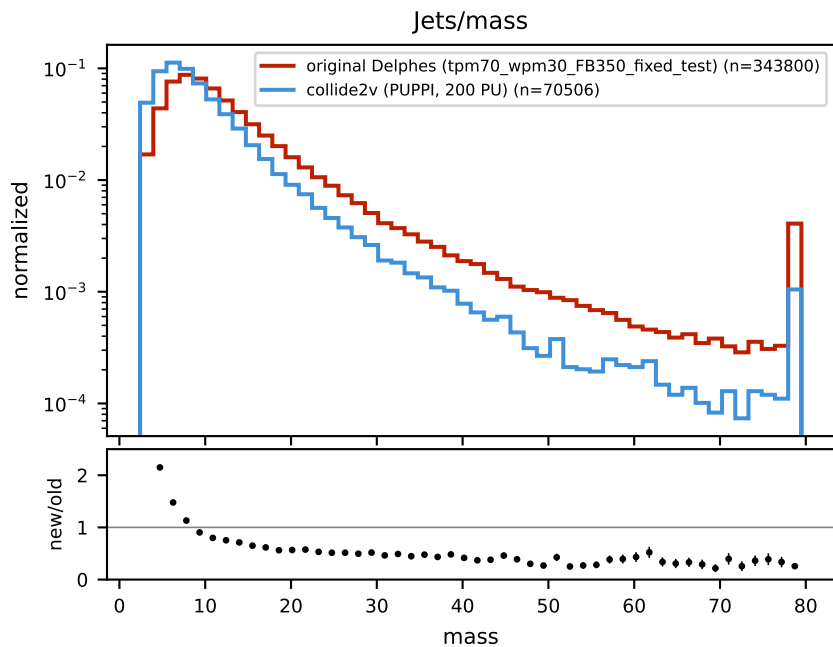
All histograms are normalized to unit area (shape comparison). Under/overflow is put in the edge bins. Per-object histograms include only real (unpadded) objects. Ratio panels: new / old, with statistical errors.

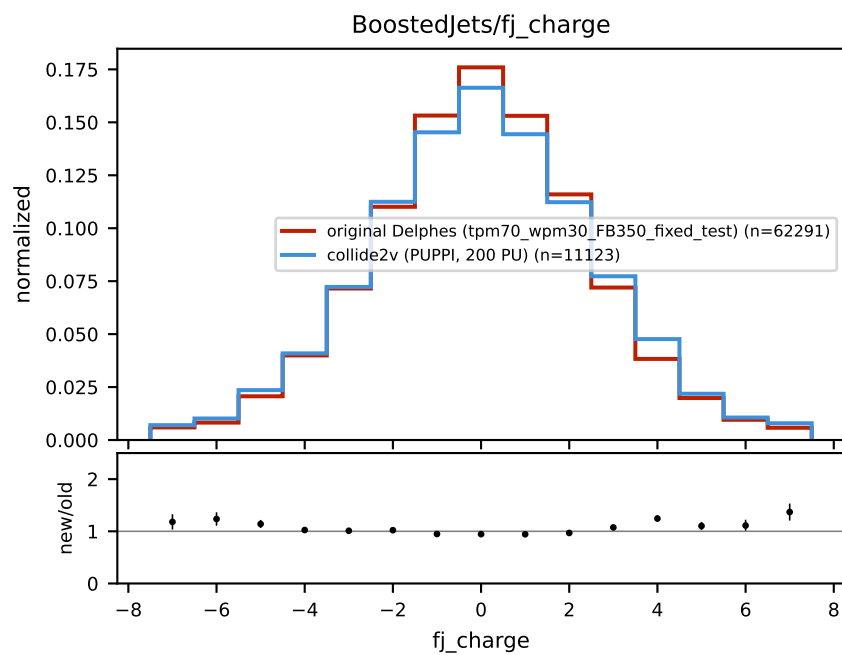
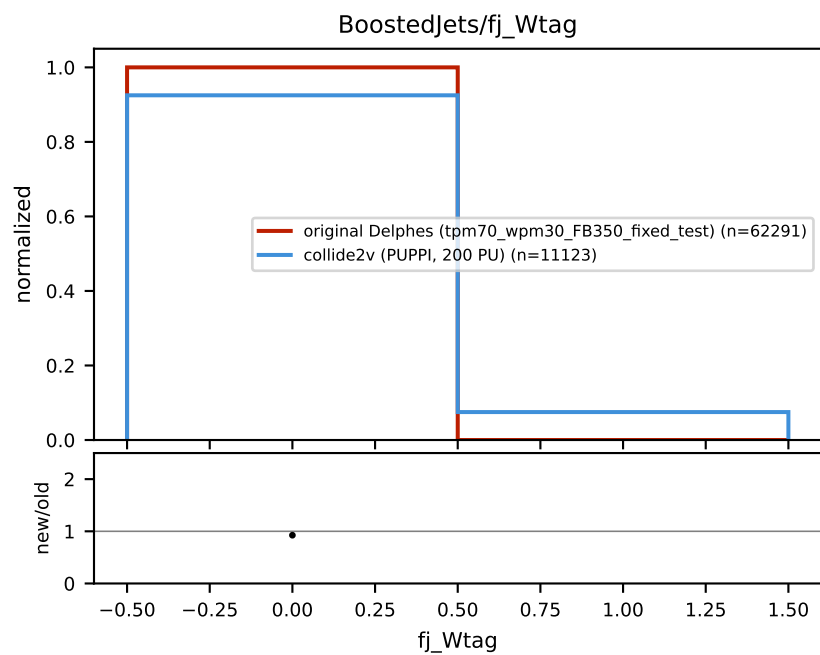
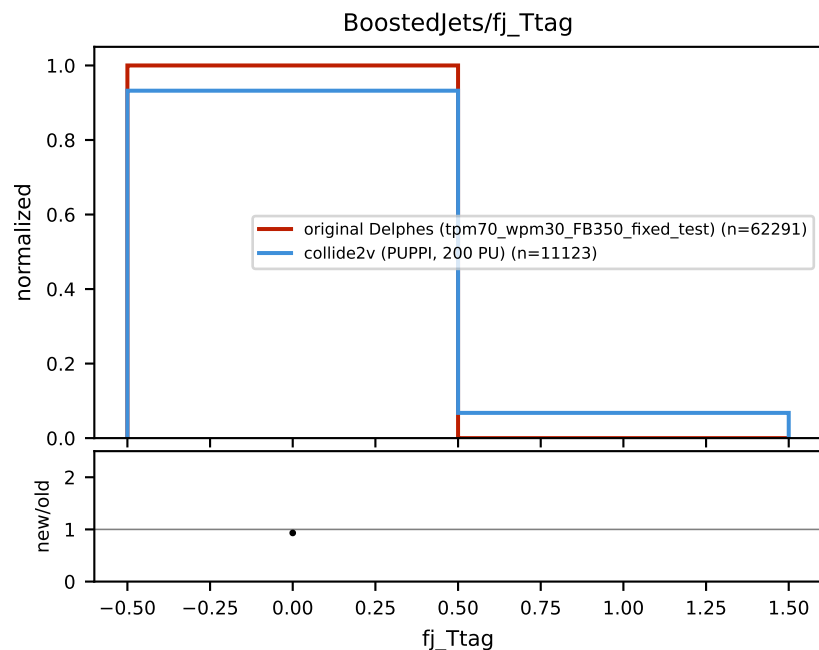
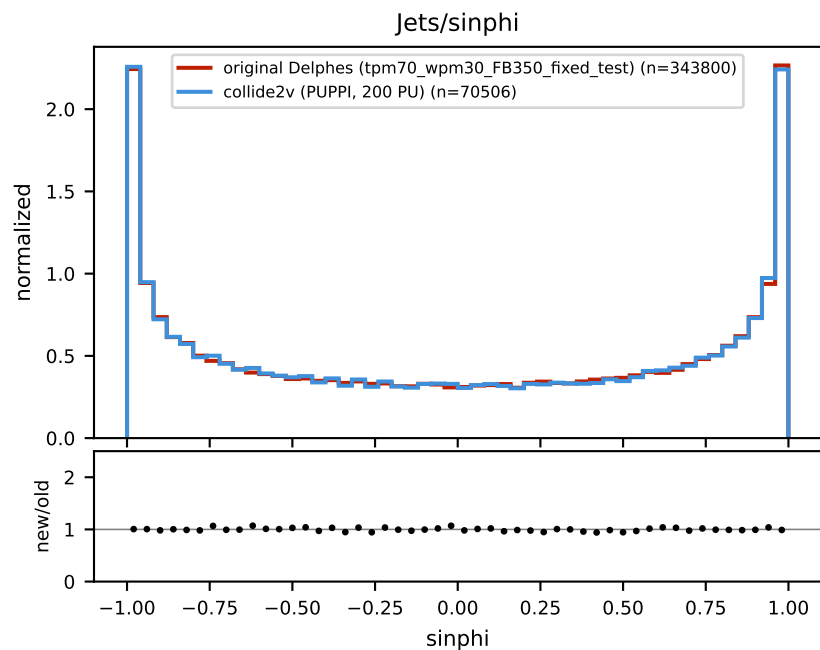
```
Features only in new: Jets/btag_L, Jets/btag_M, Jets/btag_T
Features only in old:
```

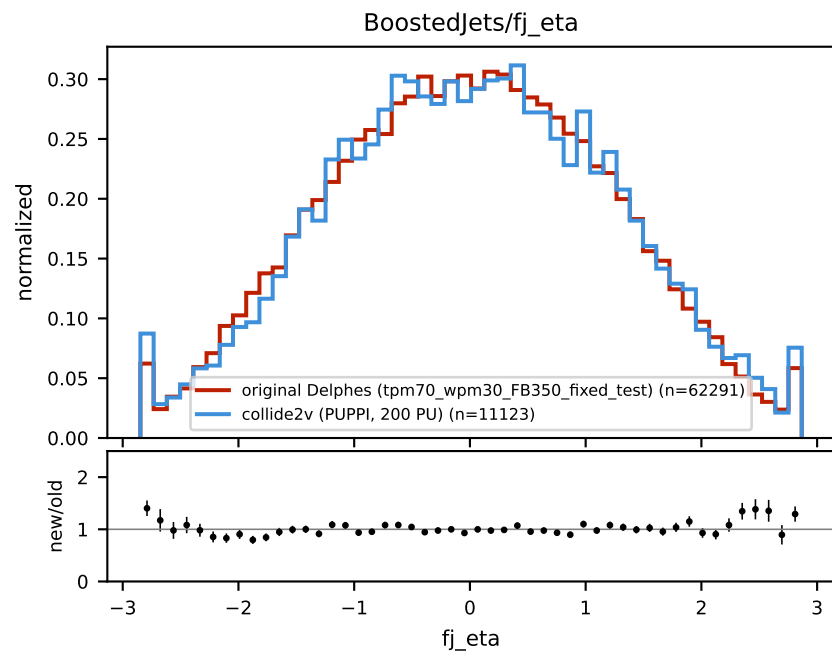
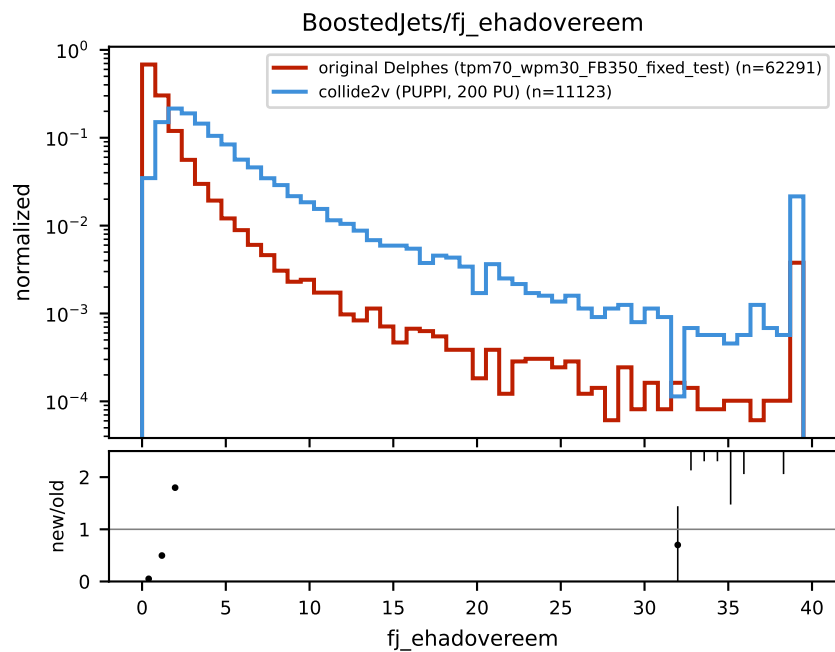
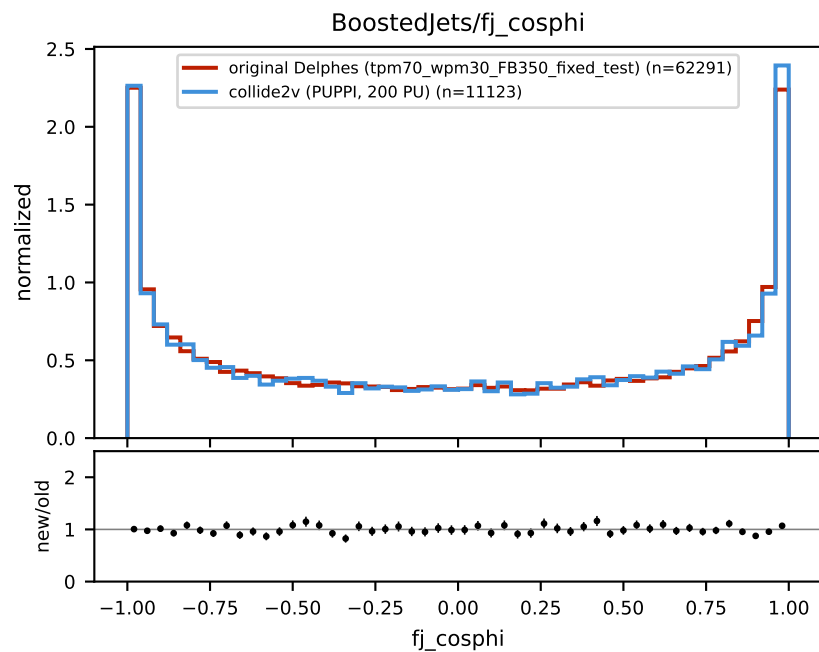
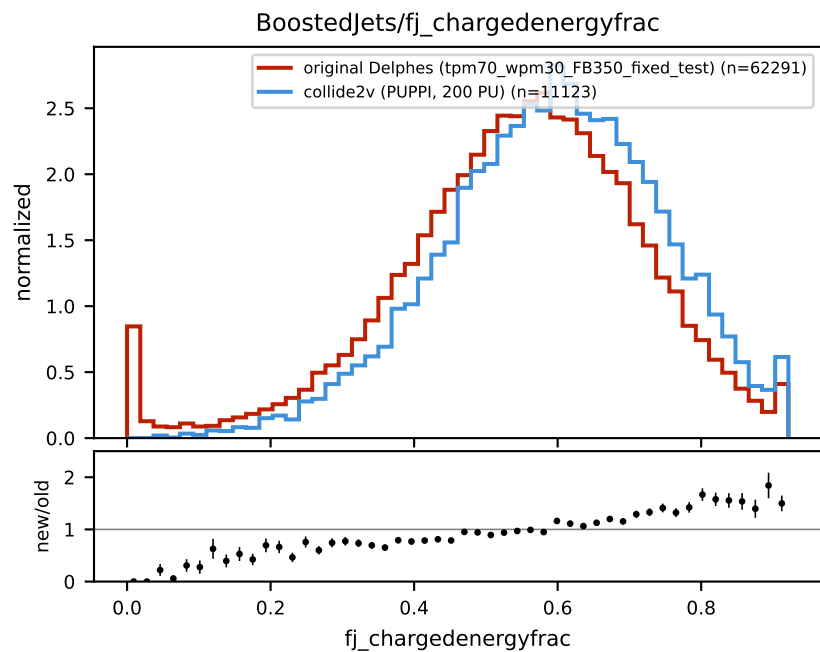
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new settings: {"sample": "tt0123j_5f_ckm_L0_MLM_hadronic", "target_events": 50000, "train_frac": 0.8, "n_tops": 2, "n_targets": 2, "min_valid_targets": 0, "
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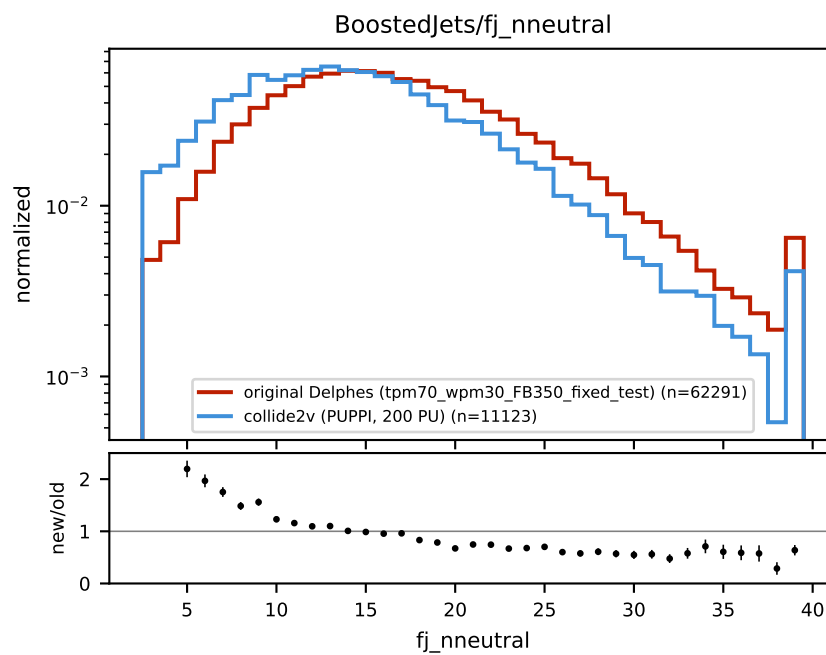
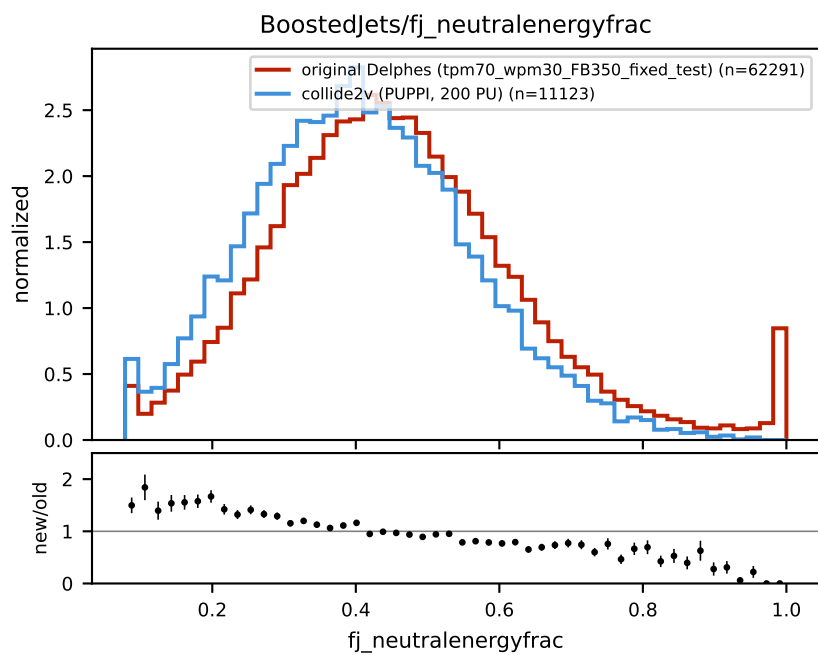
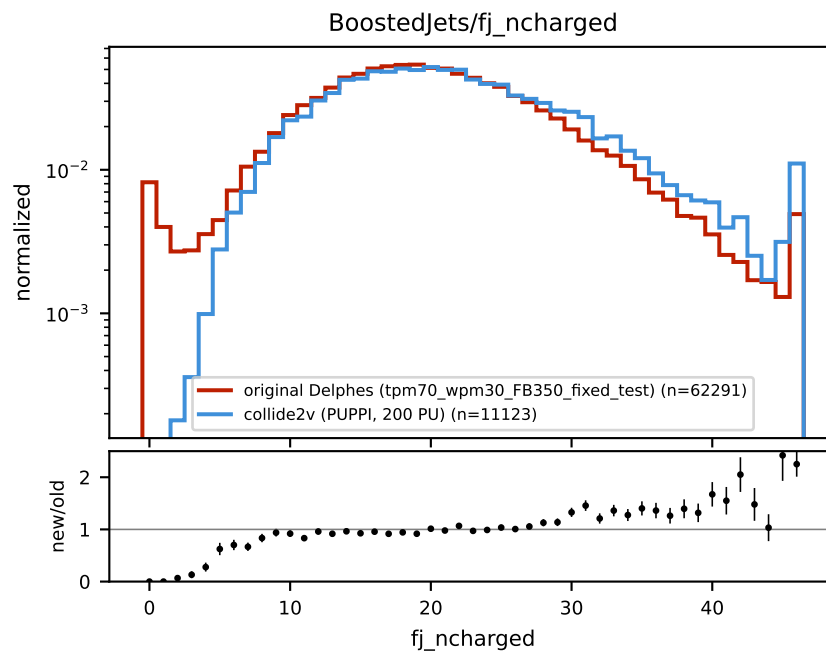
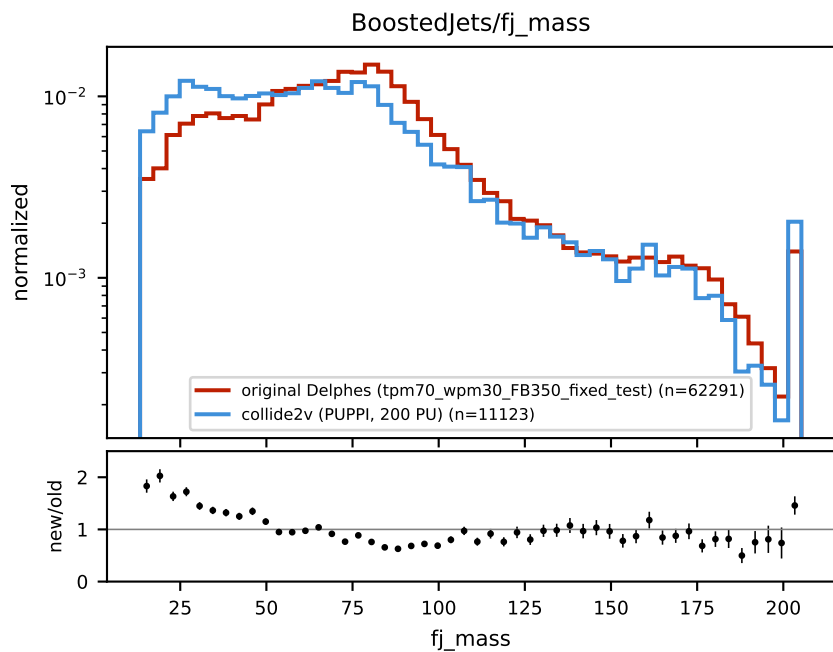


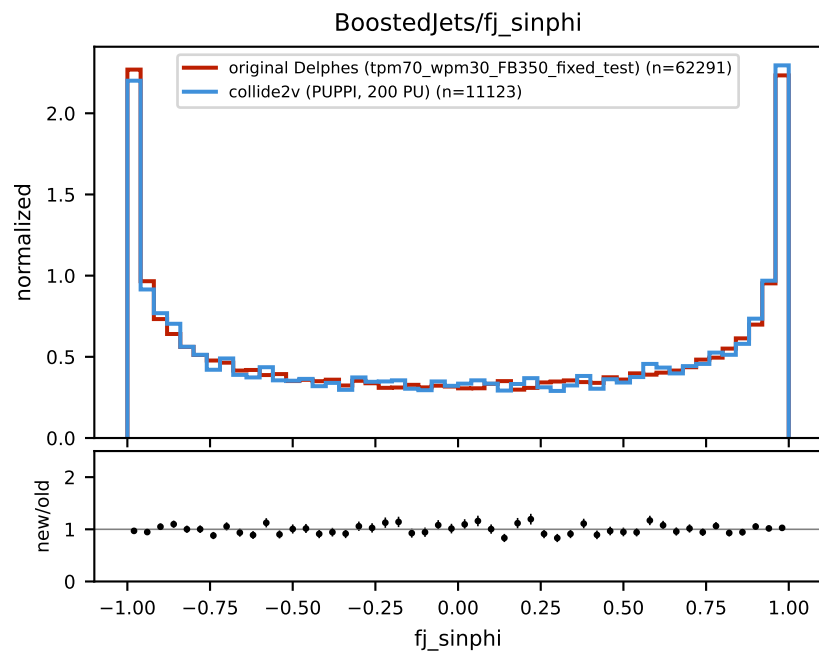
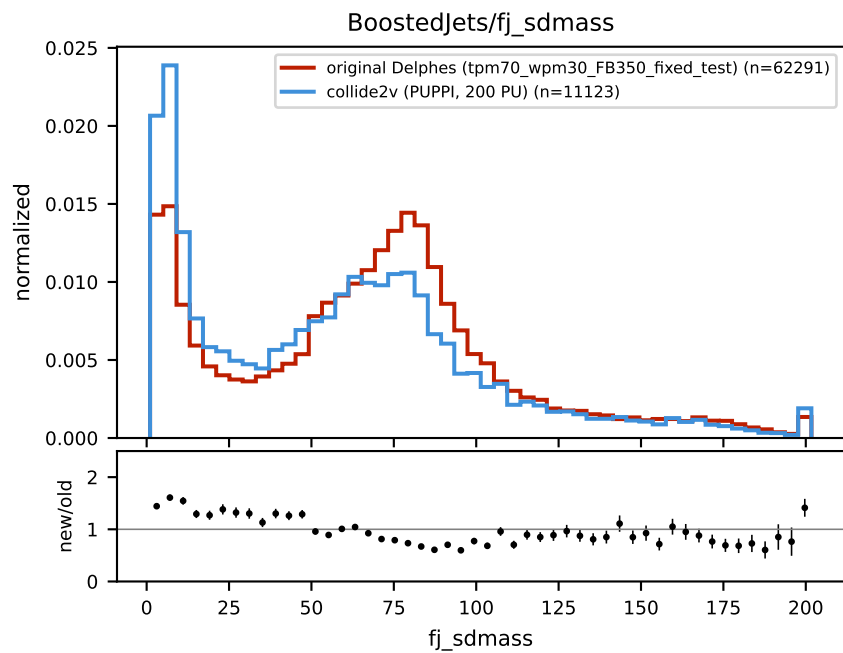
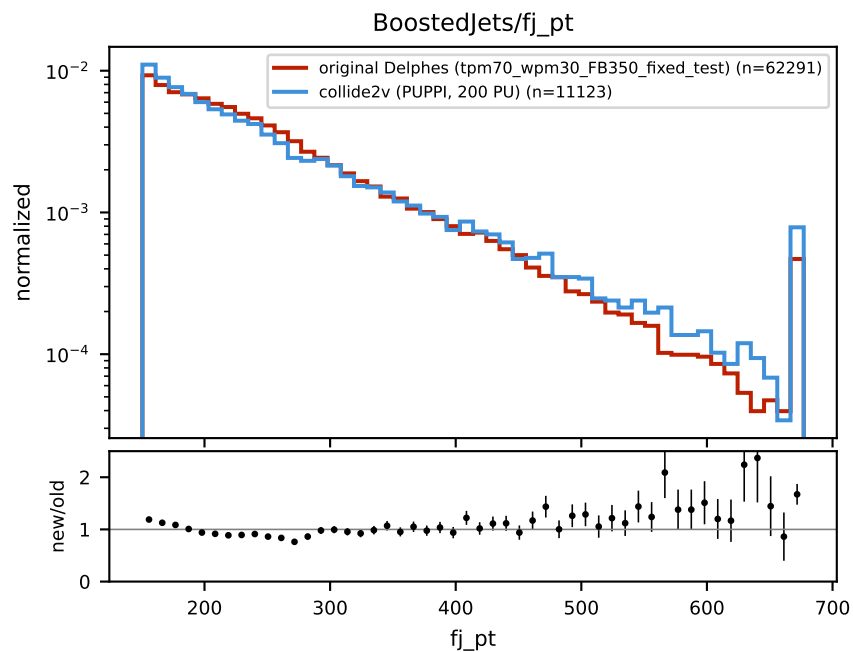
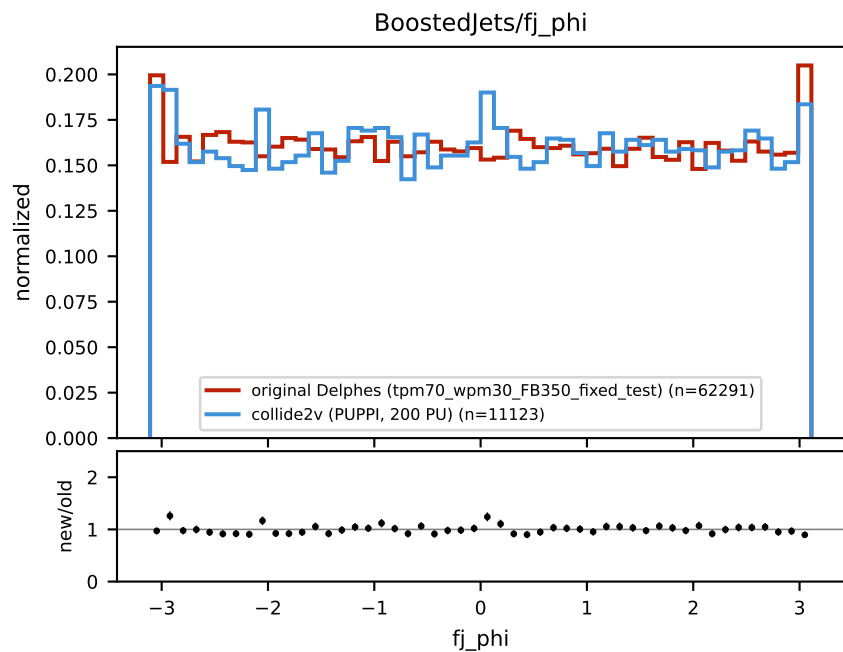


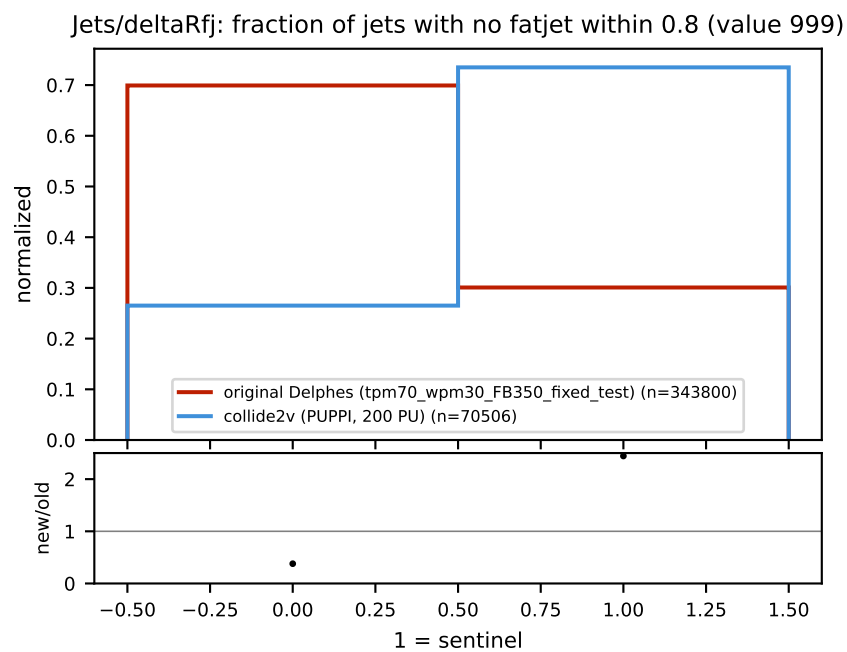
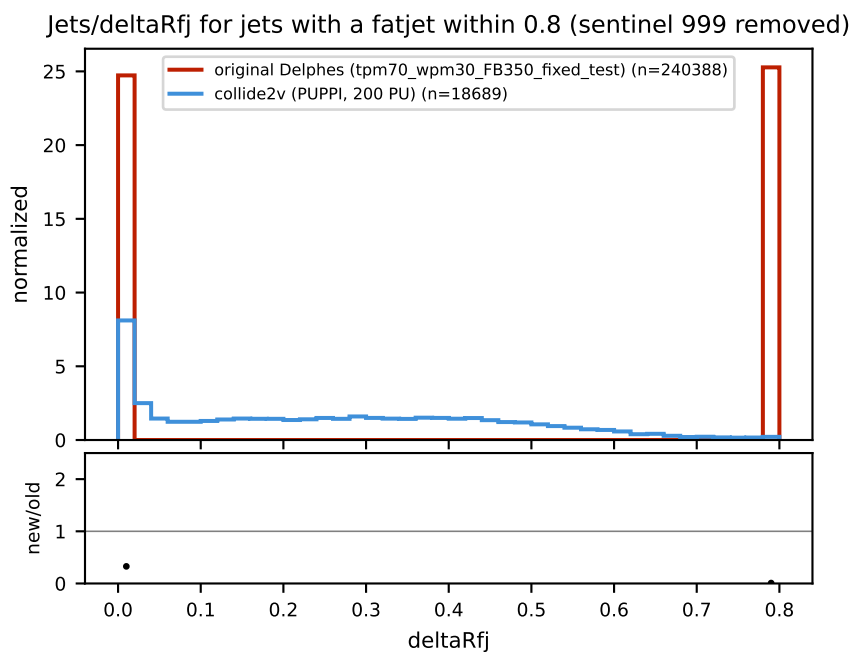
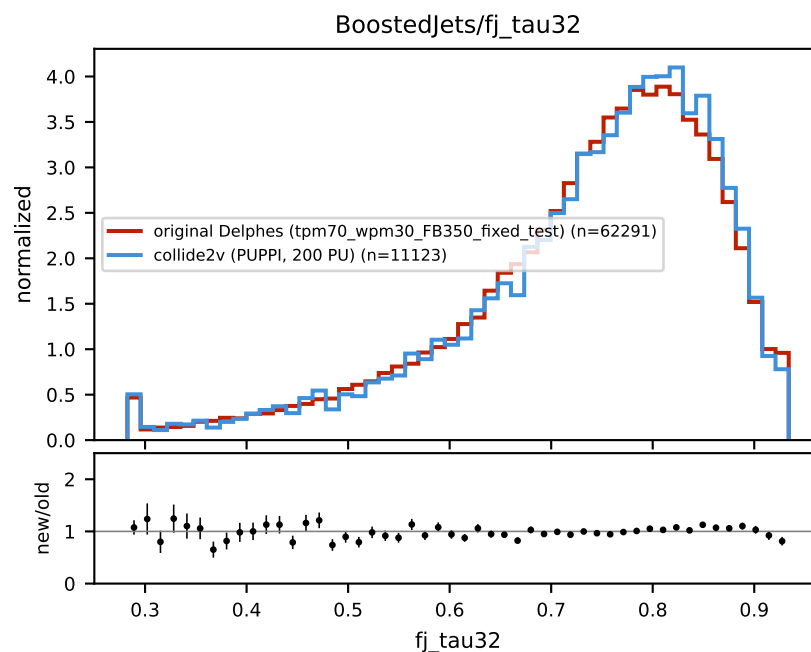
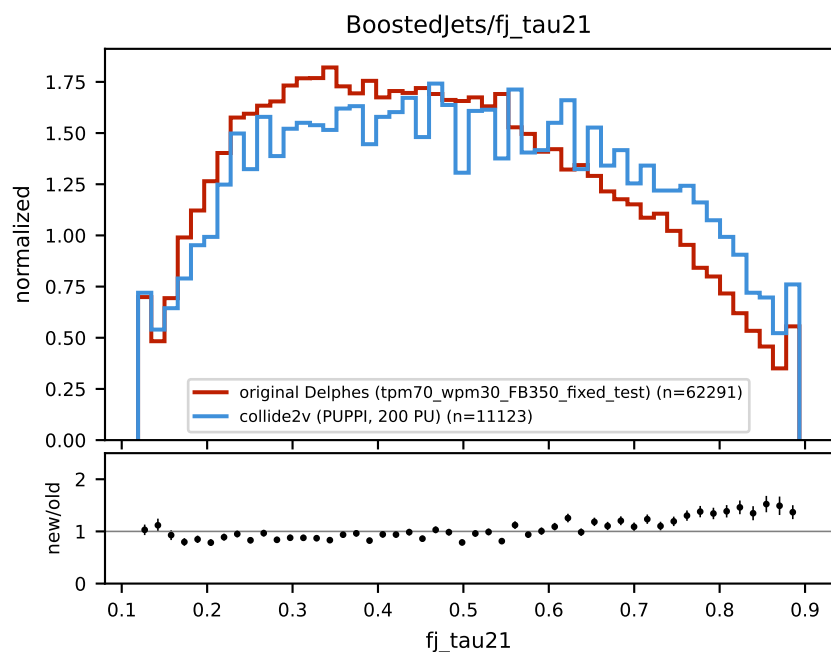


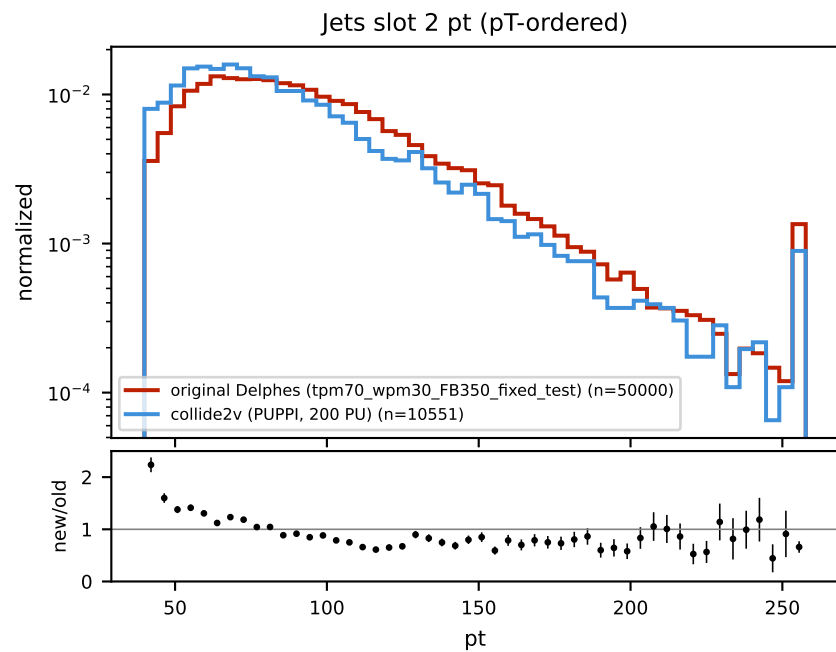
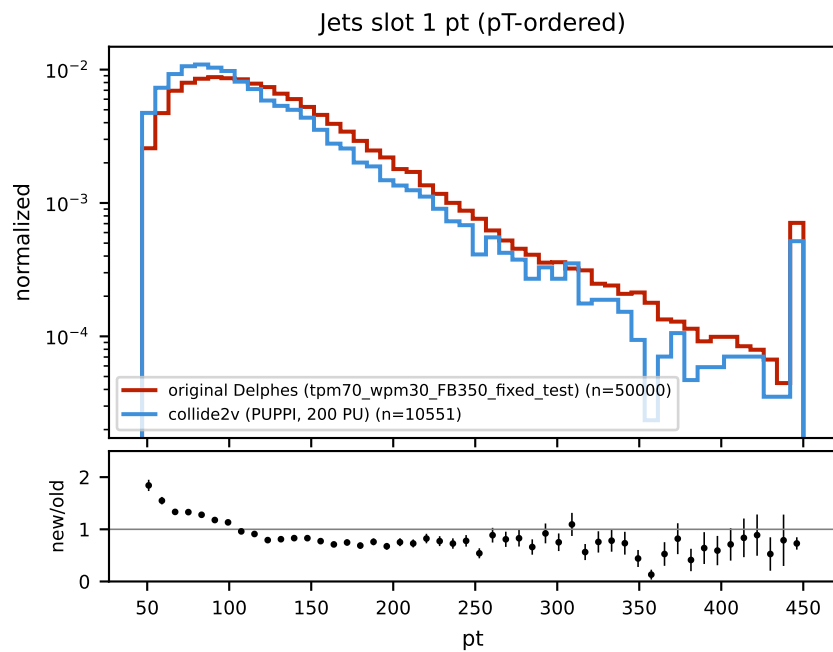
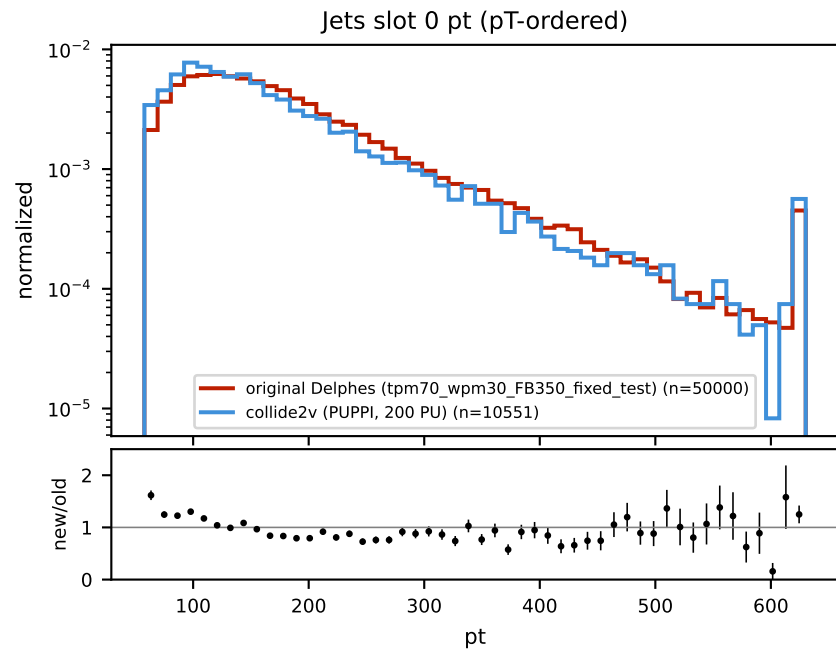
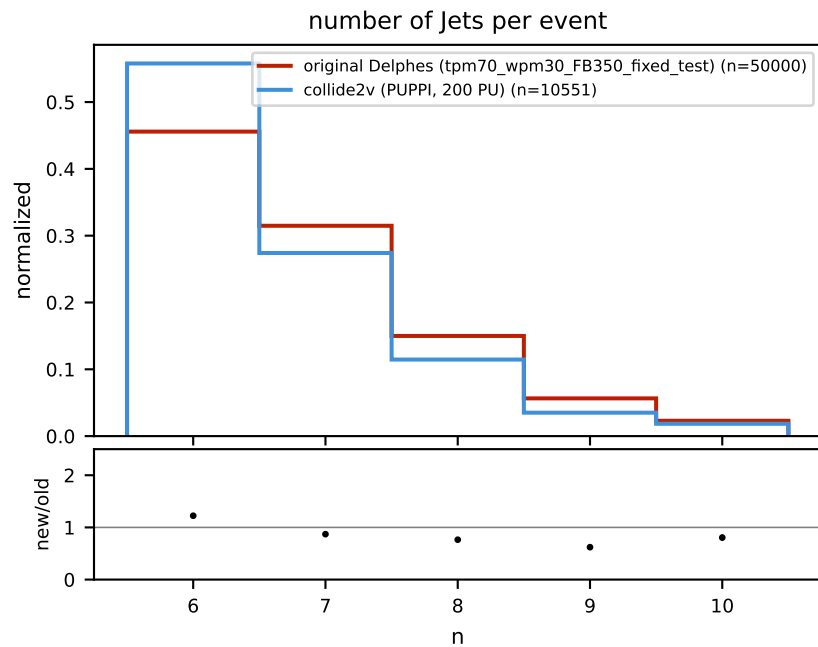




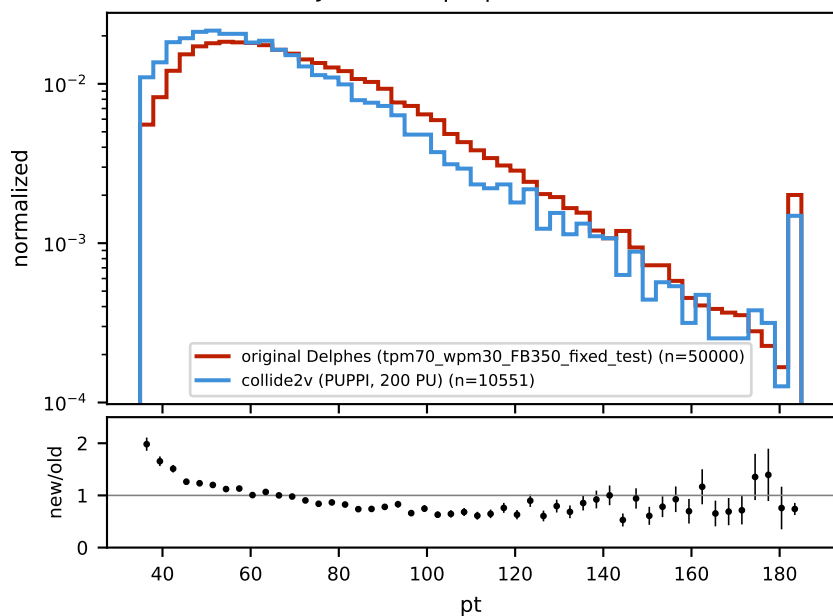




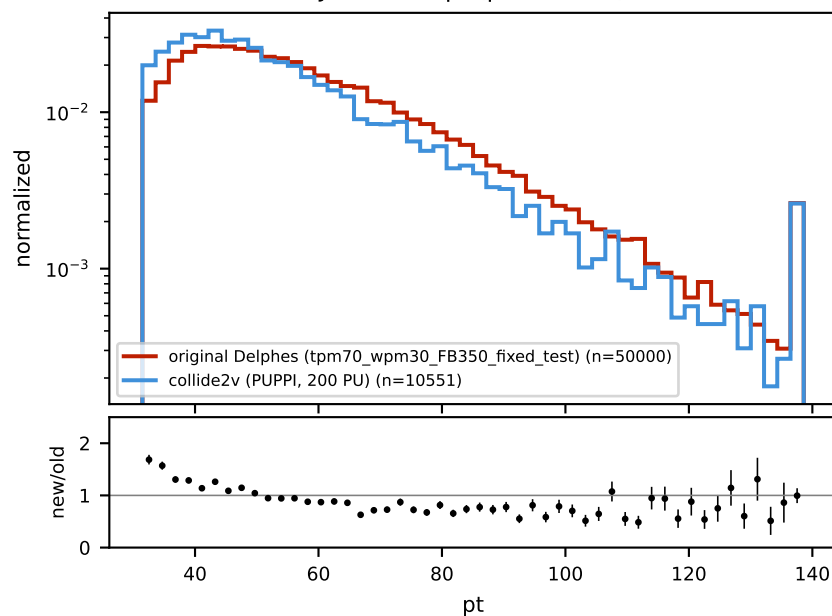




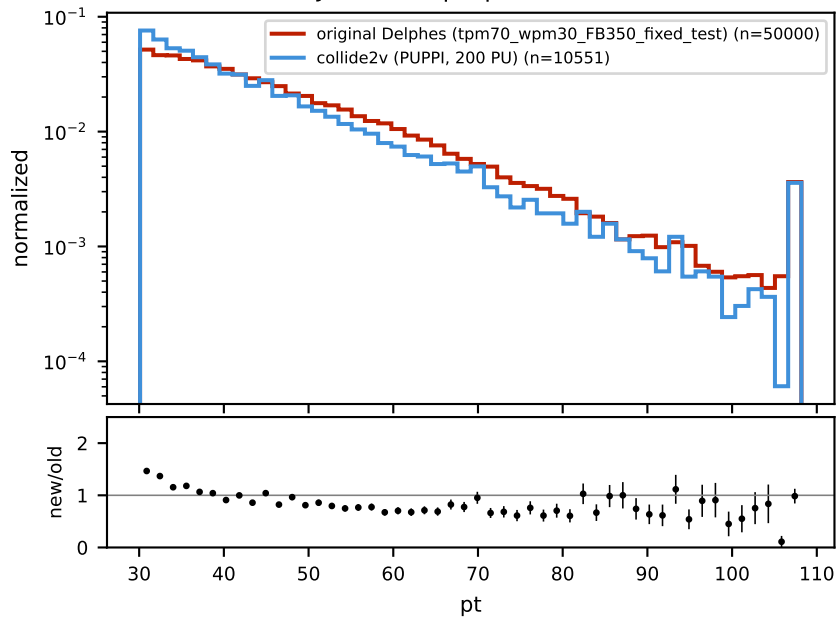
Jets slot 3 pt (pT-ordered)



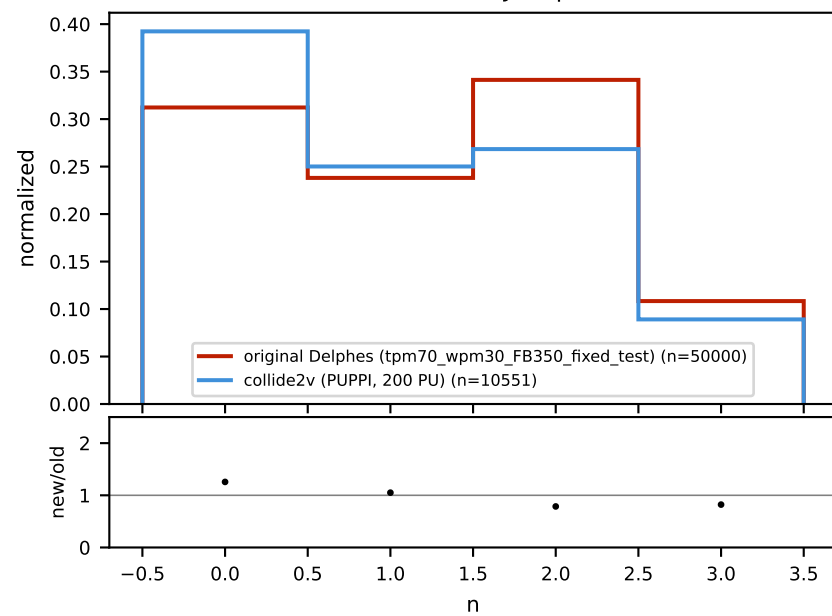
Jets slot 4 pt (pT-ordered)

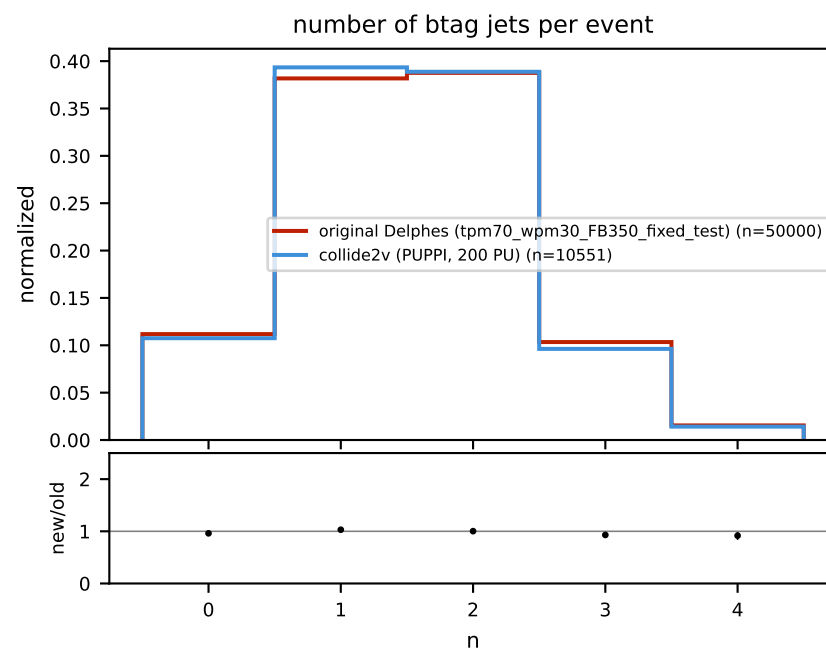
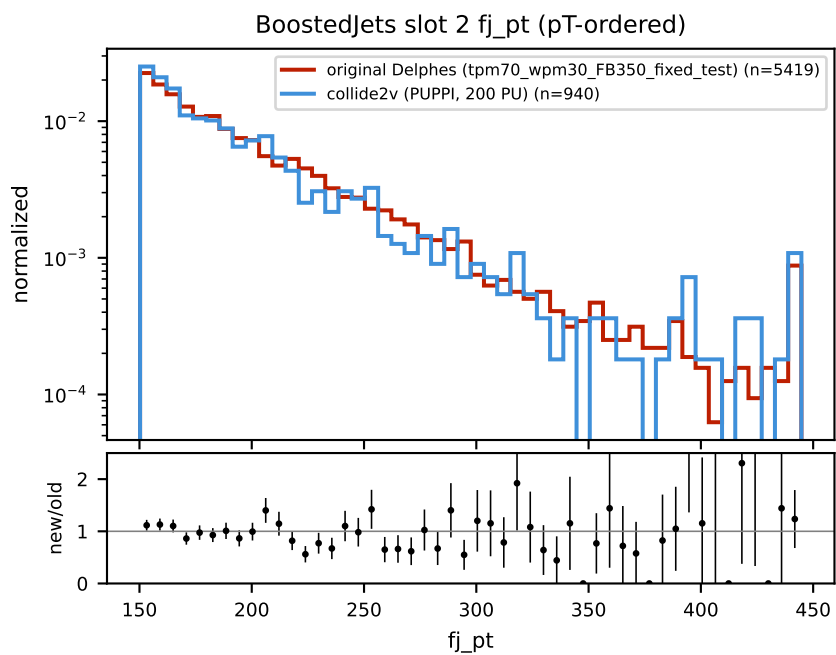
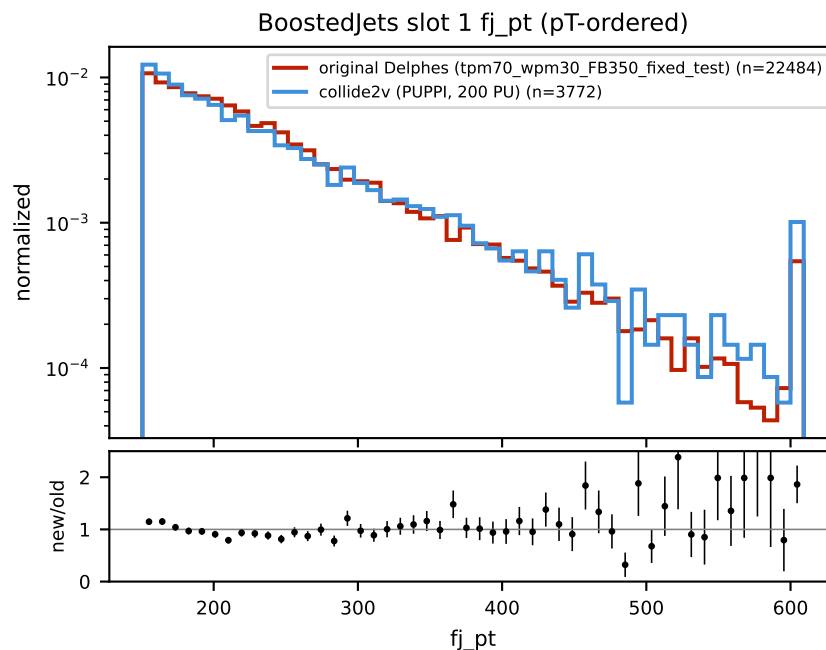
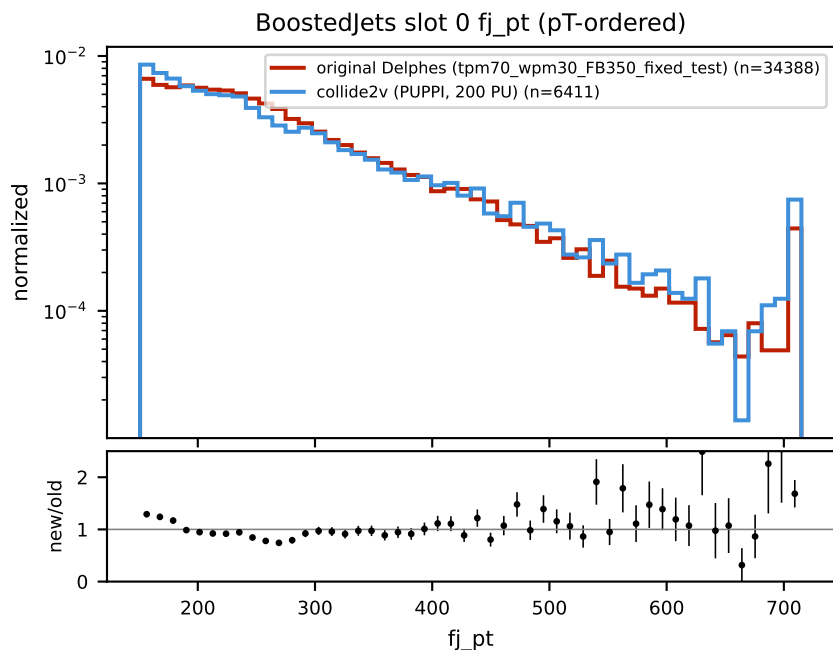


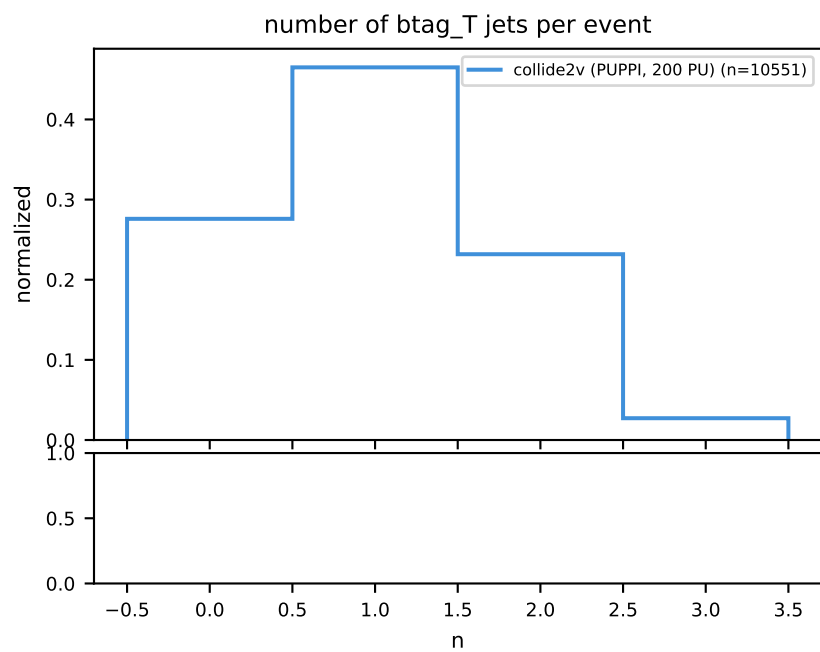
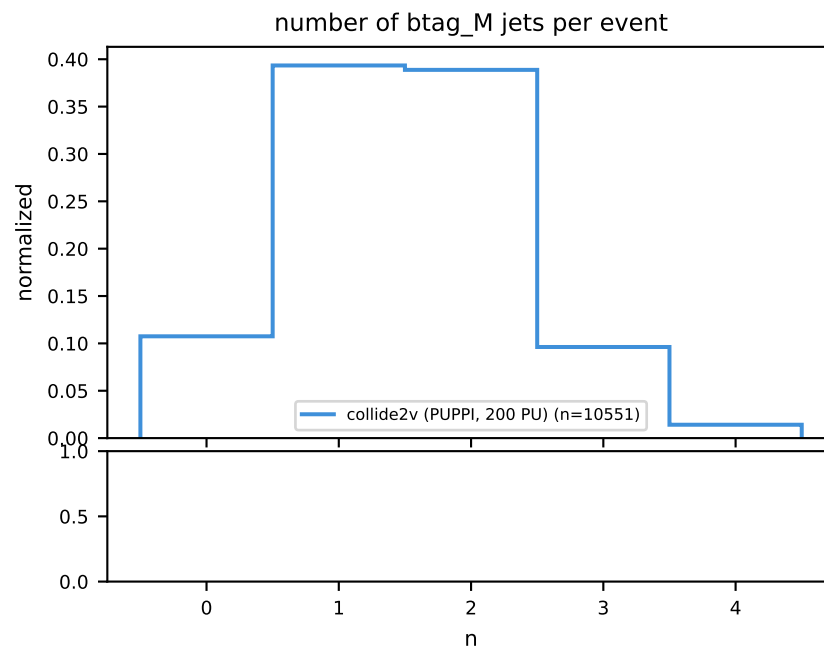
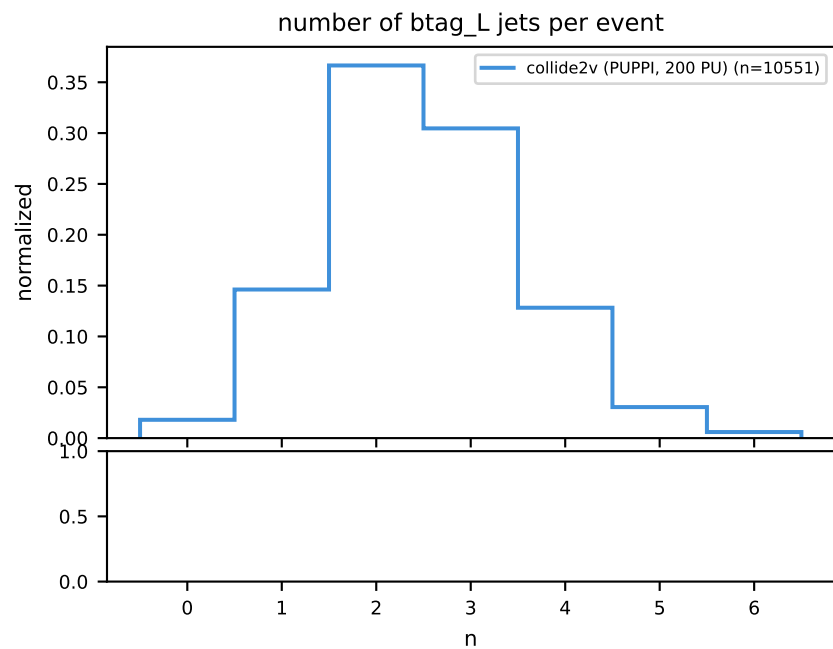
Jets slot 5 pt (pT-ordered)



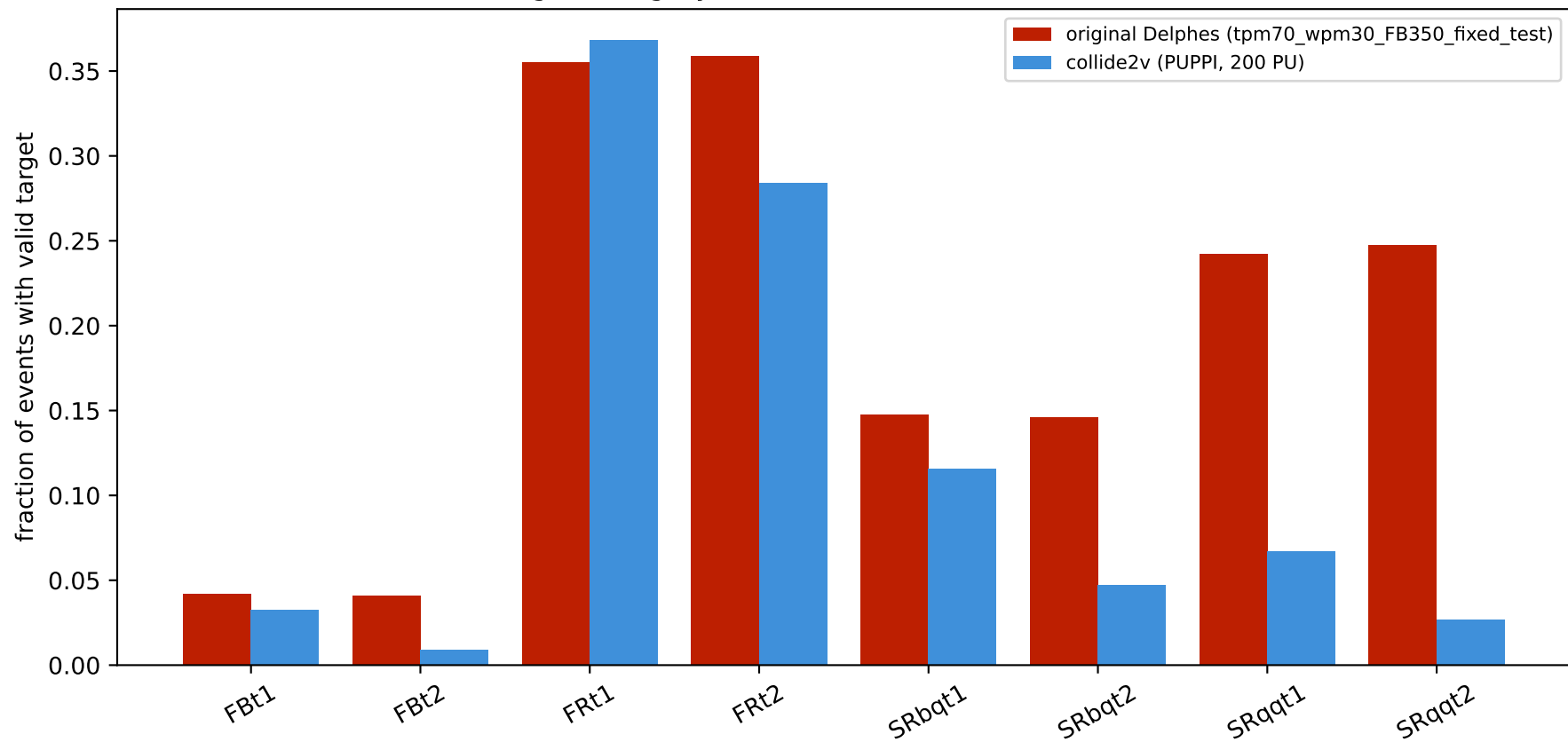
number of BoostedJets per event



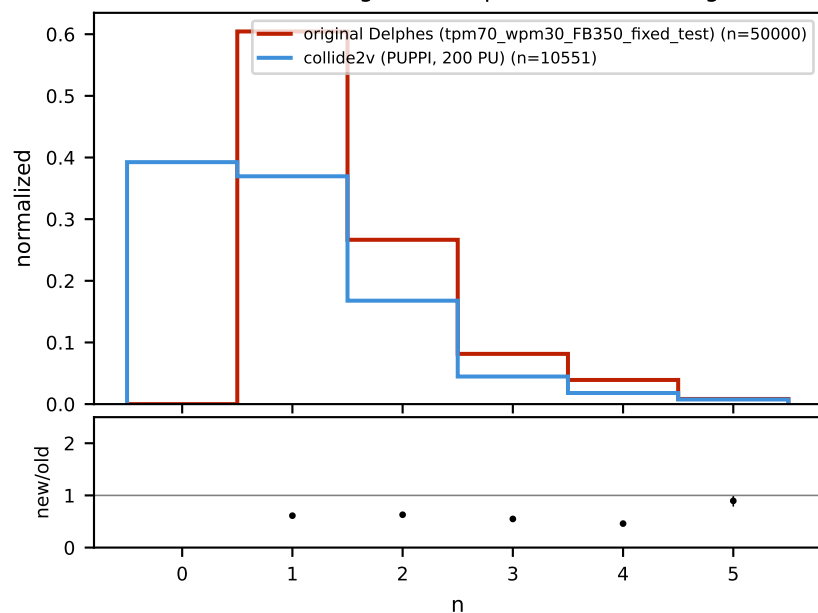




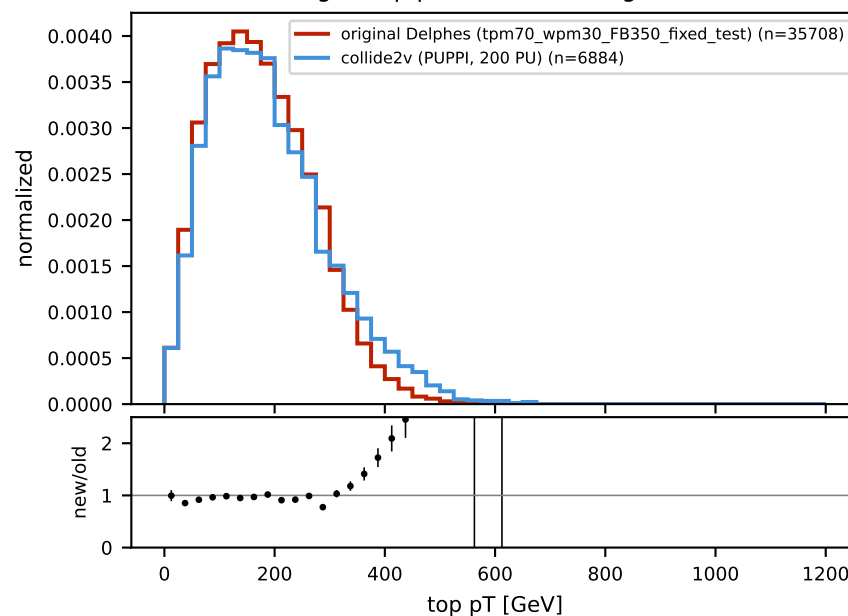
Target category fractions (TARGETS/<cat>/MASK)



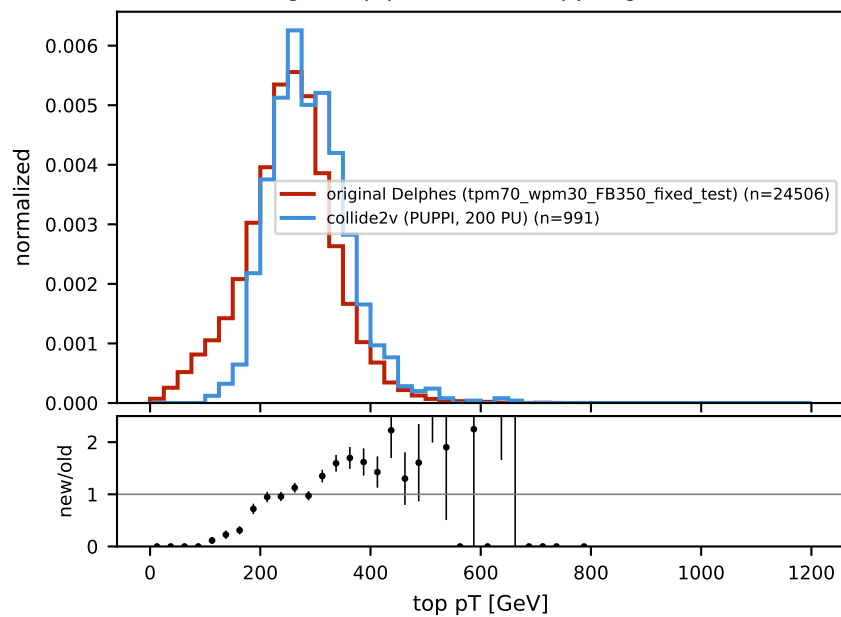
number of valid target labels per event (all categories)



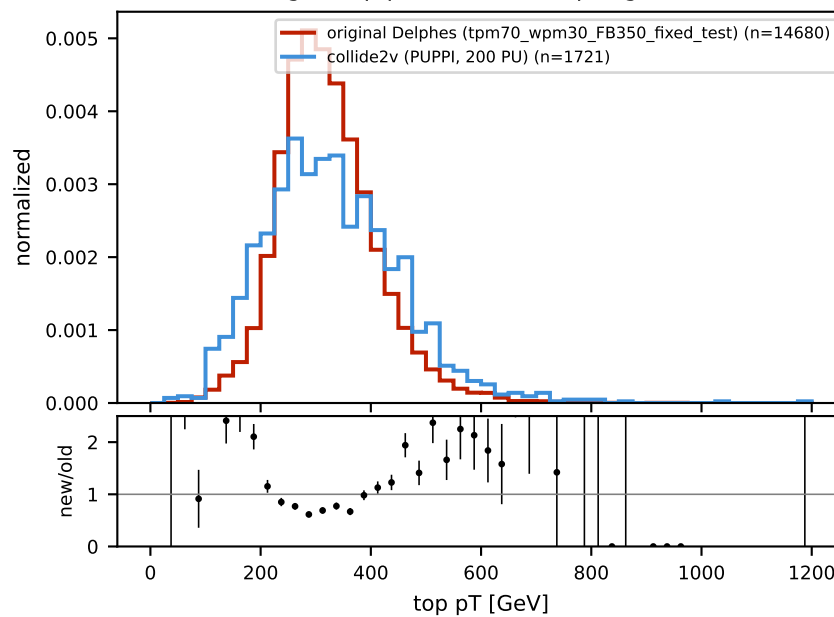
gen top pT of valid FR targets

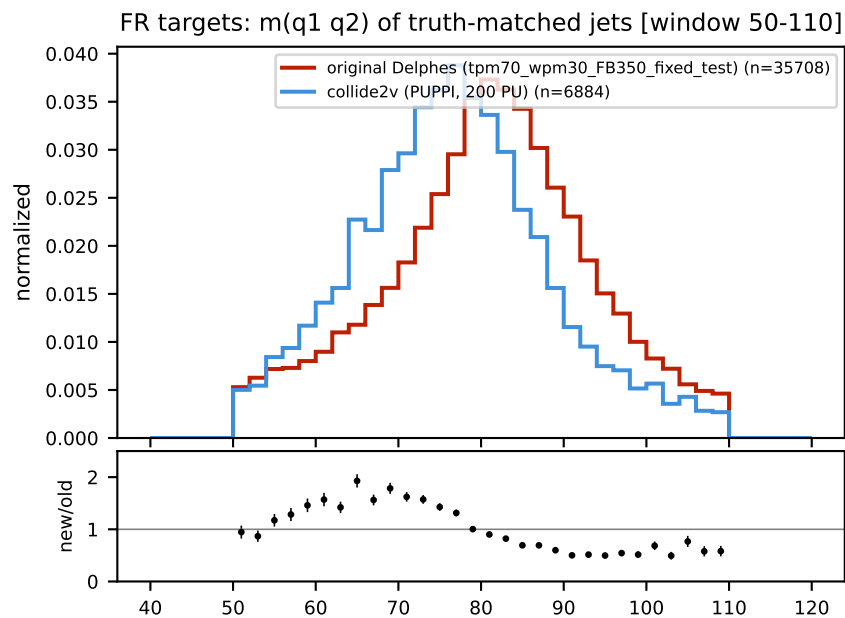
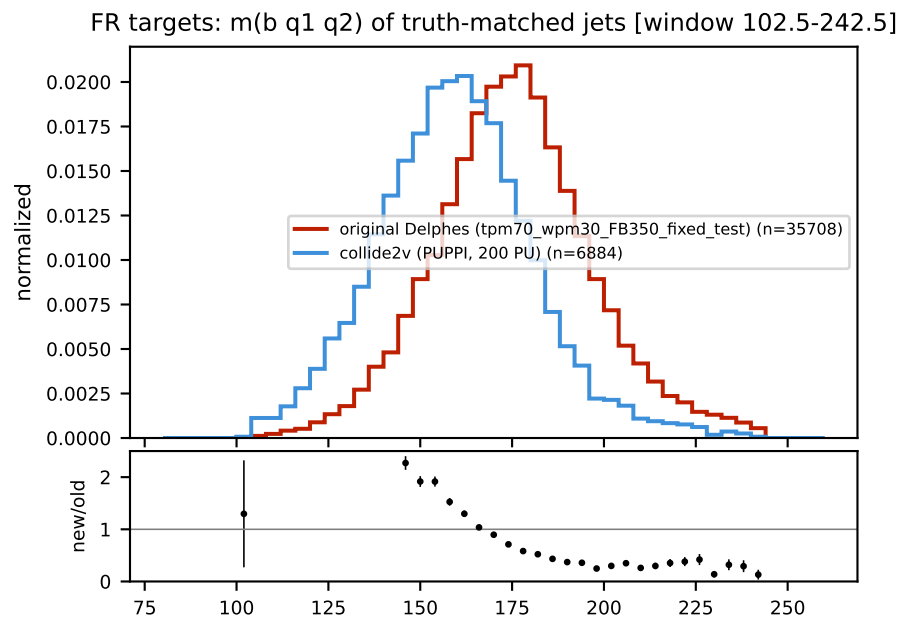
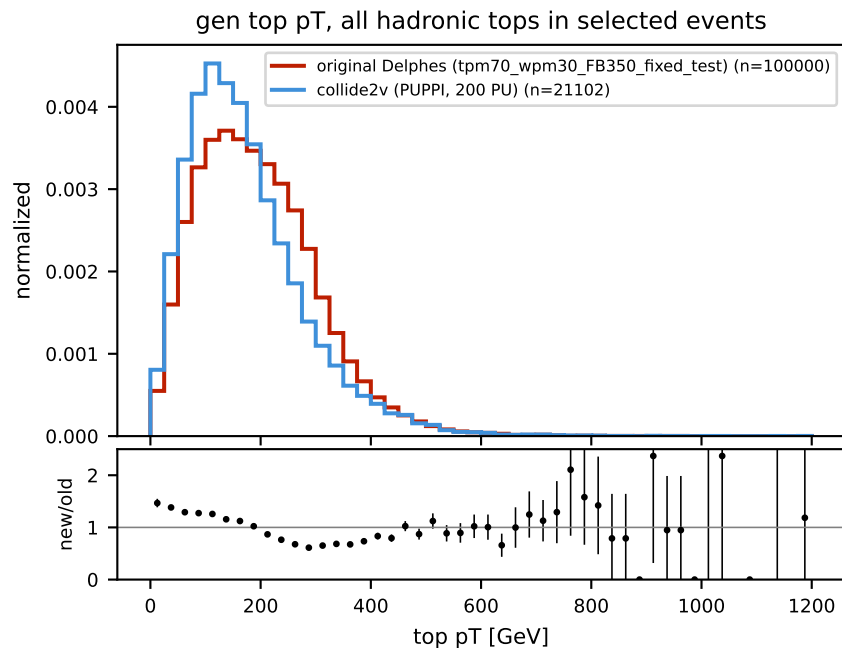
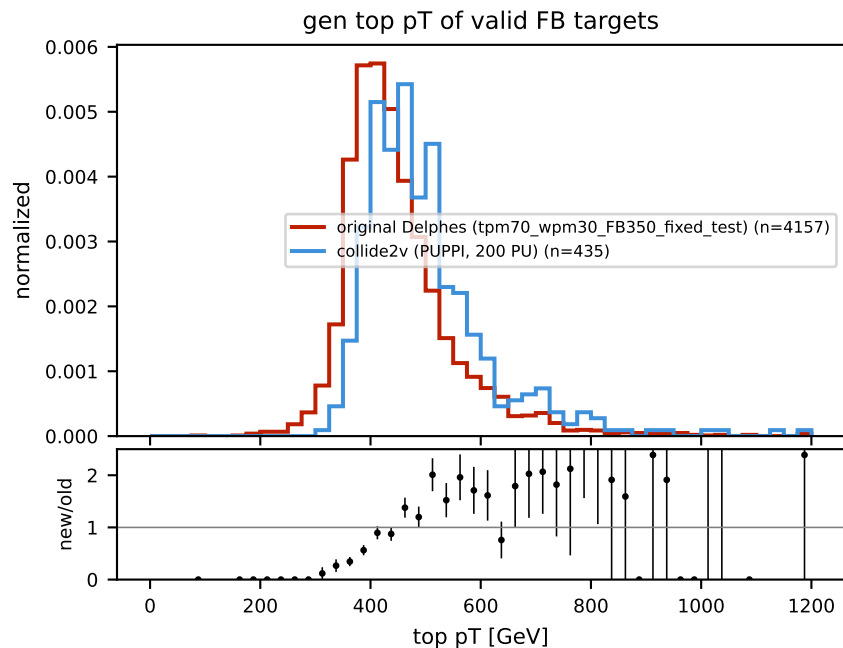


gen top pT of valid SRqq targets

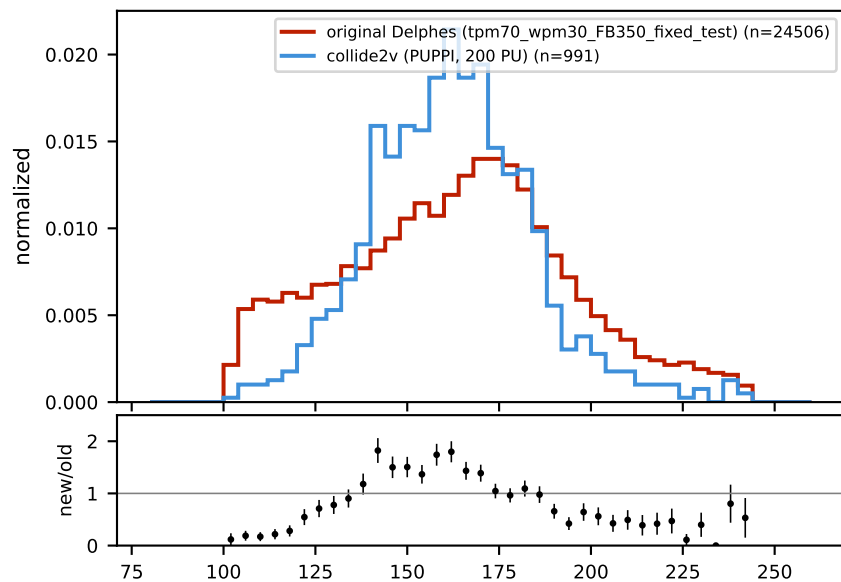


gen top pT of valid SRbq targets

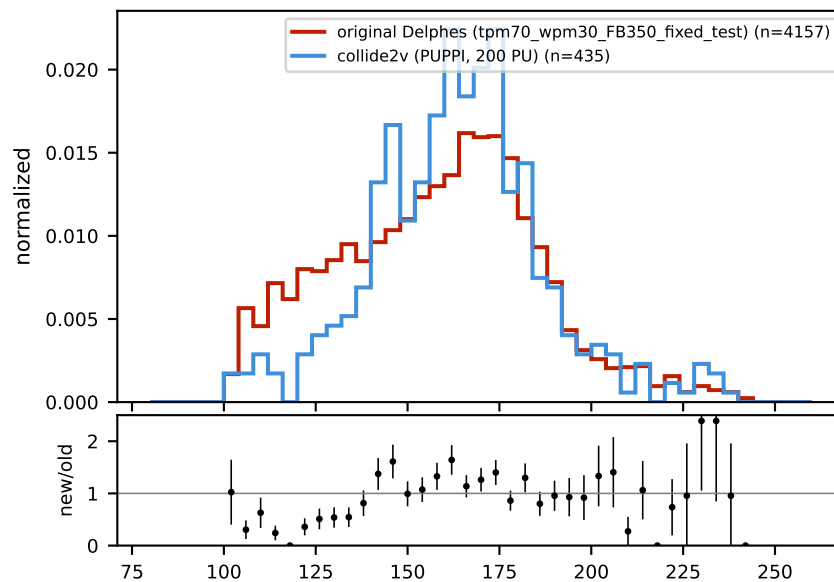




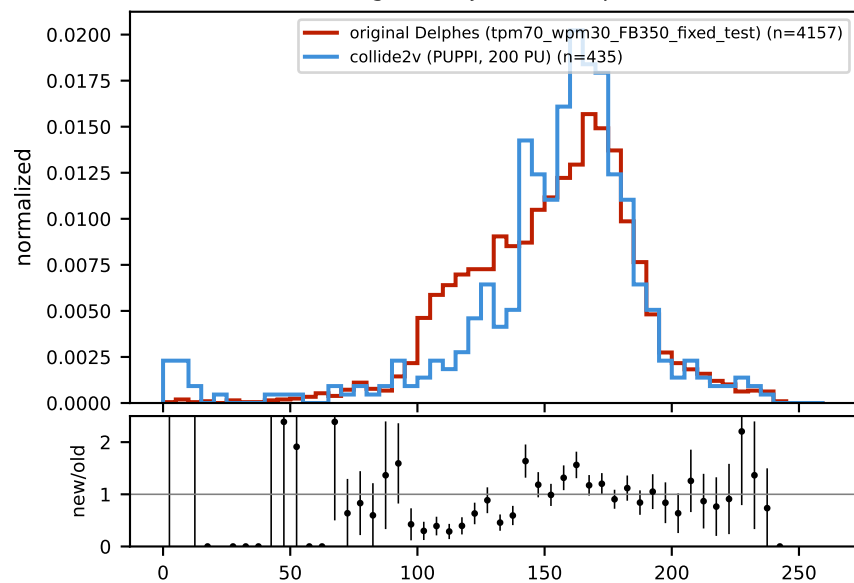
SRqq targets: $m(\text{b-jet} + \text{W fatjet})$ [window 102.5-242.5]



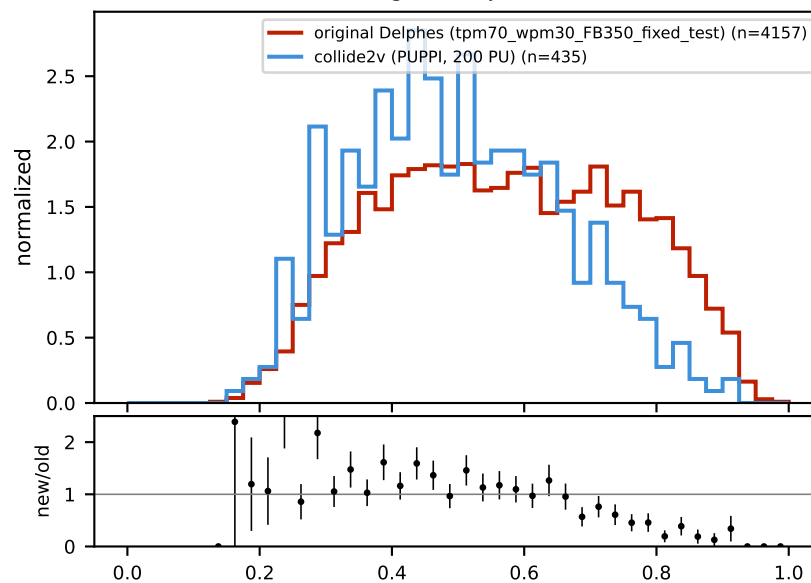
FB targets: fatjet (ungroomed) mass [window 102.5-242.5]



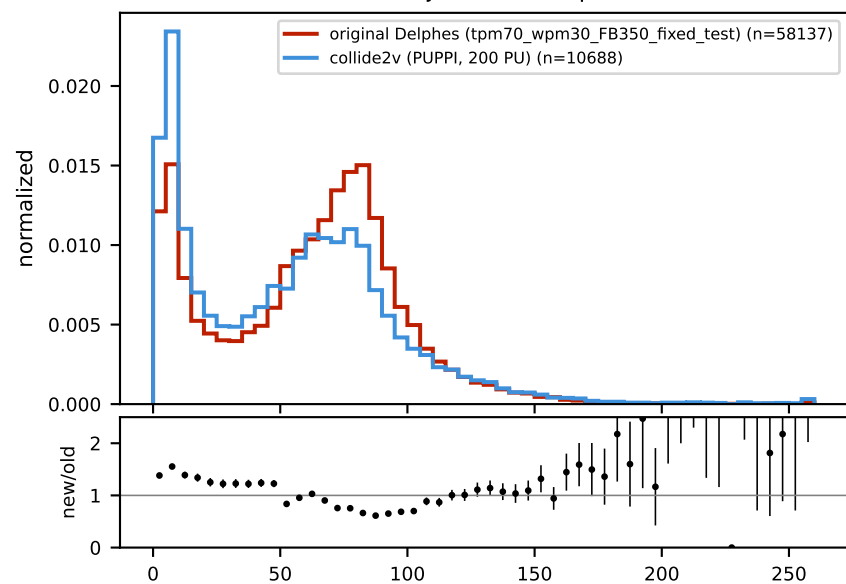
FB targets: fatjet soft-drop mass



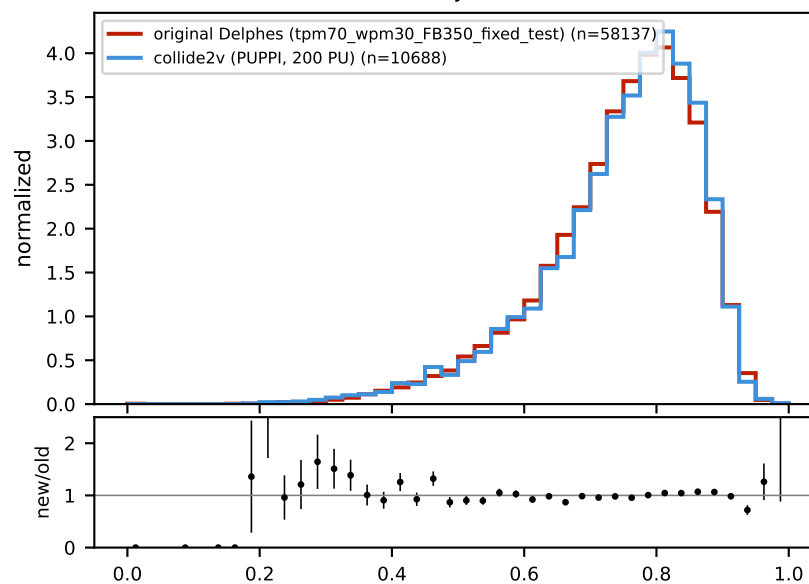
FB targets: fatjet tau32



non-FB fatjets: soft-drop mass

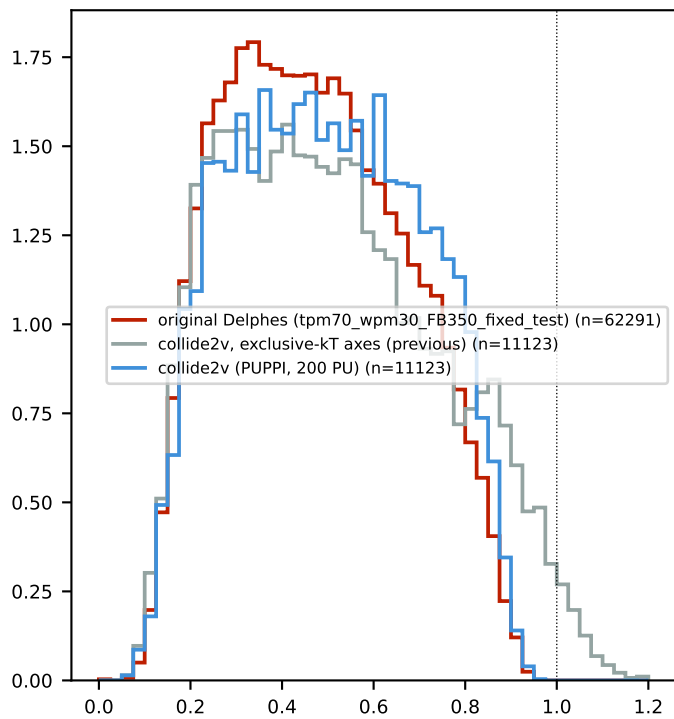


non-FB fatjets: tau32

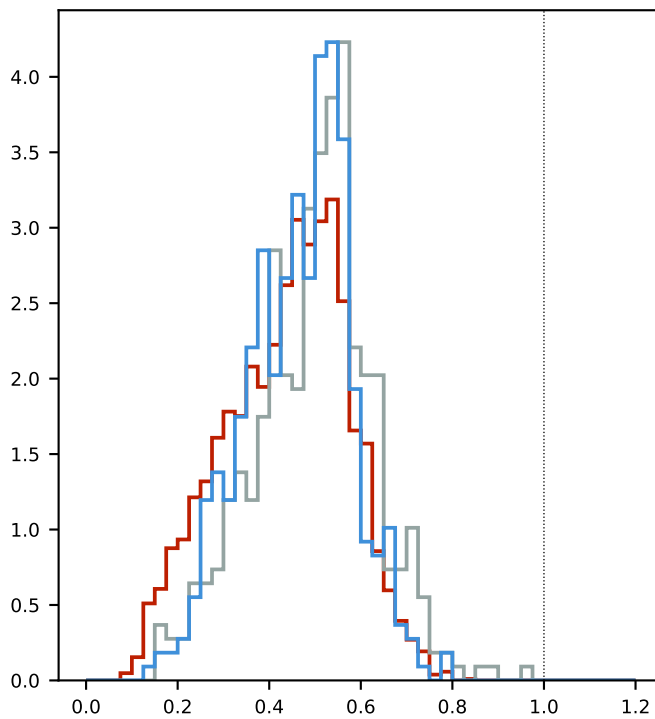


N-subjettiness ratios: original Delphes vs collide2v with plain exclusive-kT axes vs one-pass kT axes

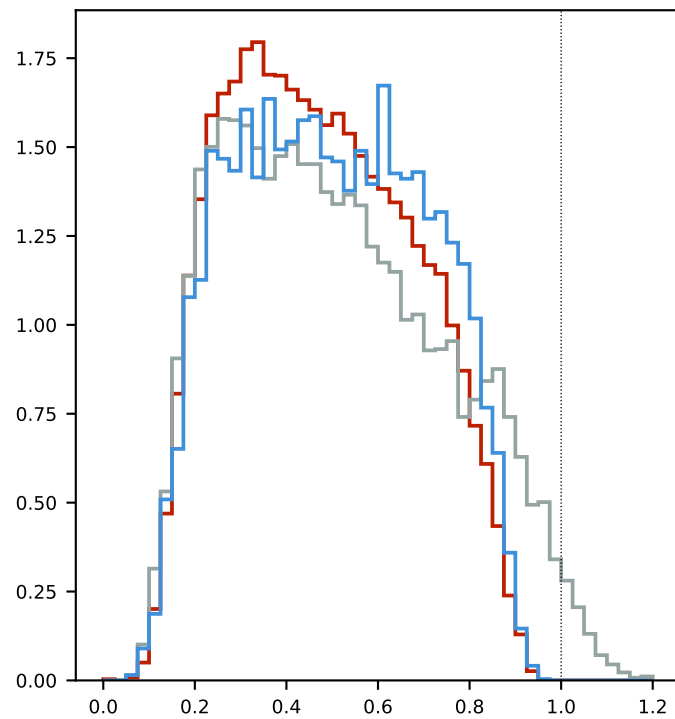
fj_tau21: all fatjets



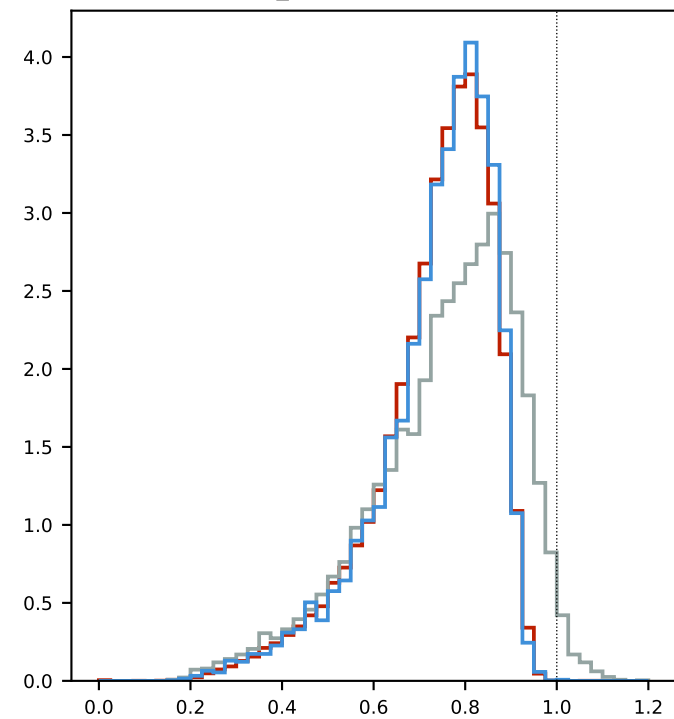
fj_tau21: FB-matched fatjets



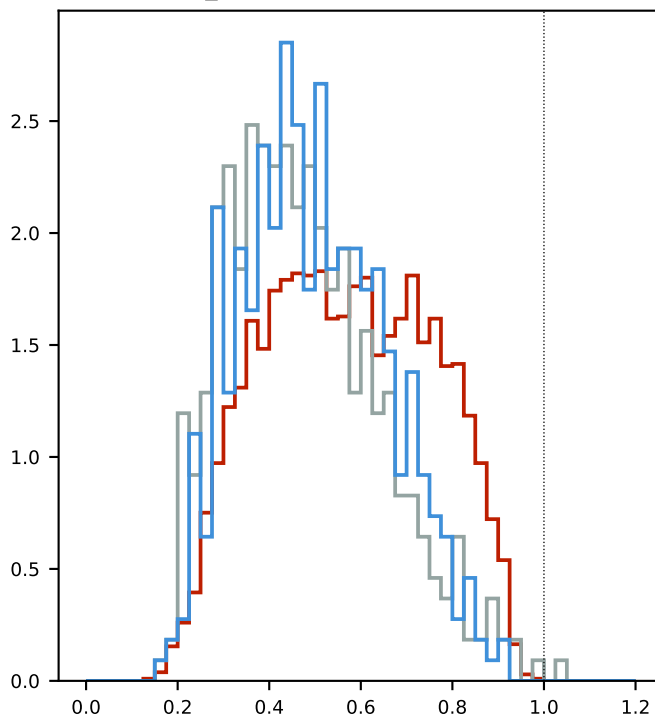
fj_tau21: non-FB fatjets



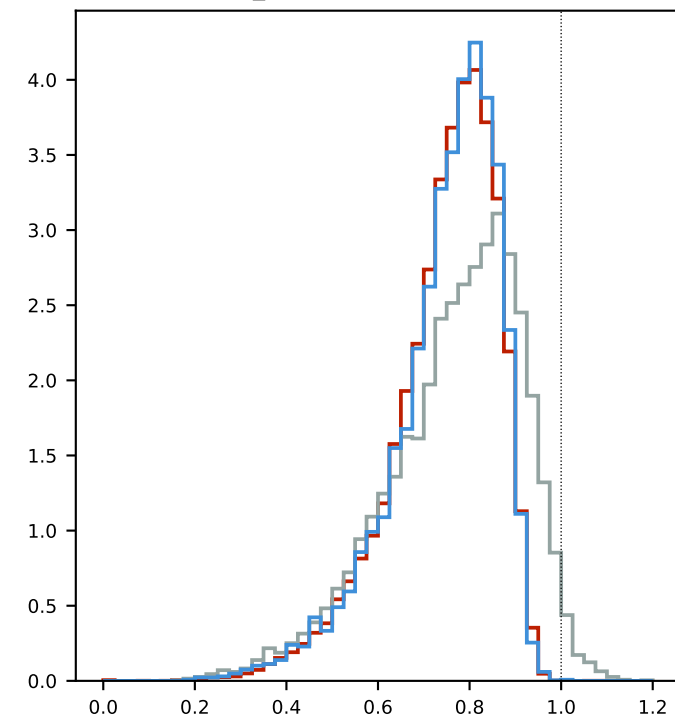
fj_tau32: all fatjets



fj_tau32: FB-matched fatjets



fj_tau32: non-FB fatjets



N-subjettiness summary (fraction of fatjets)

quantity	old	prev	new
fj_tau21 >= 0.95	0.0000	0.0389	0.0001
fj_tau21 >= 1.0	0.0000	0.0186	0.0000
median fj_tau21 (FB)	0.4523	0.5124	0.4813
median fj_tau21 (other)	0.4619	0.4847	0.4929
fj_tau32 >= 0.95	0.0013	0.0725	0.0017
fj_tau32 >= 1.0	0.0000	0.0201	0.0002
median fj_tau32 (FB)	0.5685	0.4528	0.4887
median fj_tau32 (other)	0.7663	0.7908	0.7705

prev = /traindatavol/collide2v/tt_hadronic_50k_nonzeroweight/tt_hadronic_training.h5
git_sha 0626c495fae00108dce0b58c80f9d43f36fe6de3

Summary numbers

quantity	old	new
events used	50000	10551
mean jets / event	6.88	6.68
mean fatjets / event	1.25	1.05
events with 0 fatjets	0.312	0.392
events with 0 valid targets	0.000	0.392
btag rate per jet	0.223	0.227
fj_Ttag rate per fatjet	0.000	0.068
fj_Wtag rate per fatjet	0.000	0.075
jets with deltaRfj == 999	0.301	0.735
deltaRfj integer-valued?	True	False
fatjets with tau21 >= 0.95	0.000	0.000
fatjets with tau32 >= 0.95	0.001	0.002
fatjets with tau21 or tau32 == -1	0.000	0.000
median FR m(bqq) [GeV]	175.0	159.2
median FR m(qq) [GeV]	81.3	76.5
median FB fatjet m_SD [GeV]	156.9	161.2
FBt1 MASK fraction	0.042	0.032
FBt2 MASK fraction	0.041	0.009
FRT1 MASK fraction	0.355	0.368
FRT2 MASK fraction	0.359	0.284
SRbqt1 MASK fraction	0.148	0.116
SRbqt2 MASK fraction	0.146	0.047
SRqqt1 MASK fraction	0.242	0.067
SRqqt2 MASK fraction	0.248	0.027