



Jet@Clusters

Kaili Zhang

zhangkl@ihep.ac.cn

Fast Geometry + Generator



Pythia: 0.621

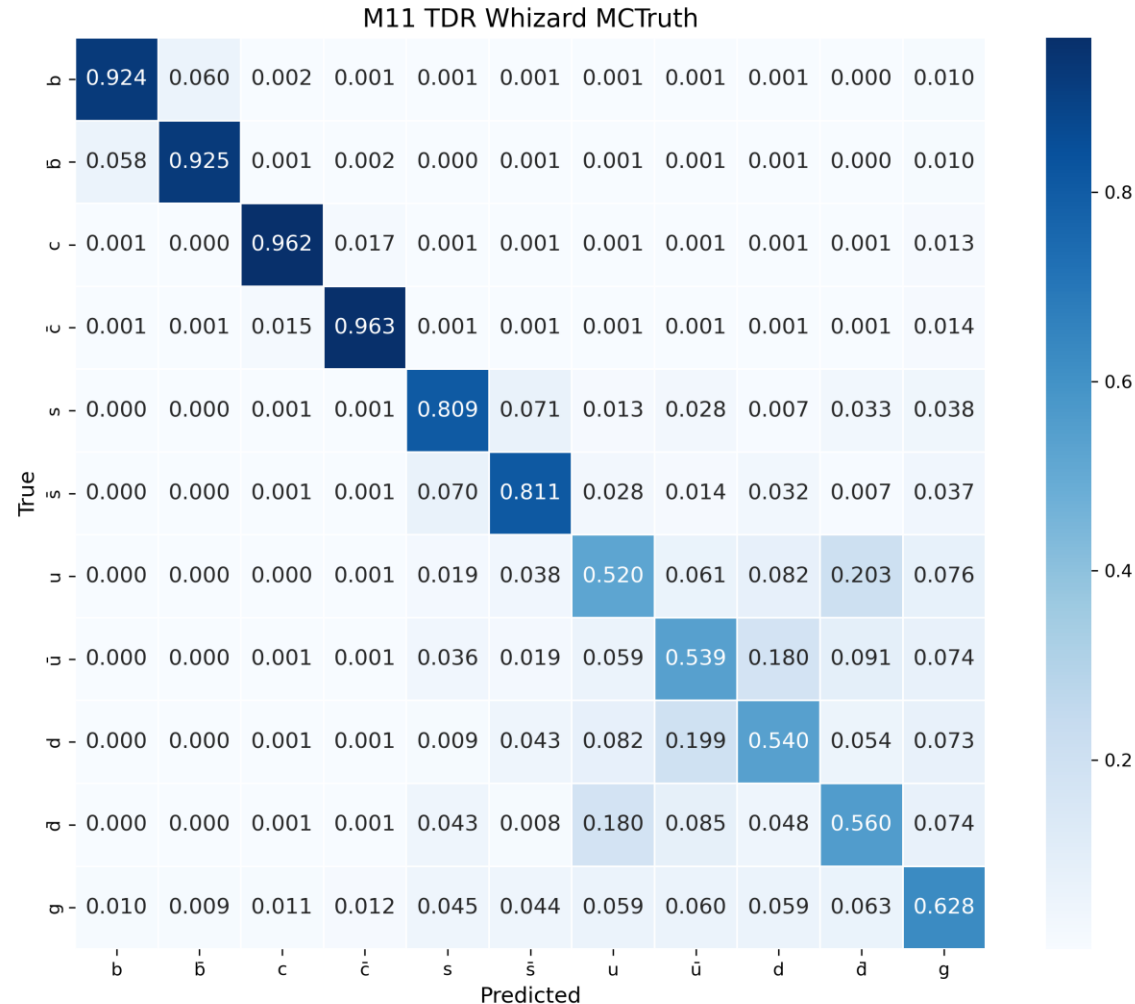
CEPC		TDR Fast Pythia ParT TruthID										
Truth	b	0.798	0.139	0.020	0.016	0.003	0.001	0.001	0.002	0.001	0.001	0.017
	$\bar{b}$	0.147	0.790	0.015	0.021	0.002	0.003	0.002	0.001	0.001	0.002	0.016
	c	0.008	0.009	0.809	0.045	0.029	0.021	0.017	0.006	0.007	0.013	0.037
	$\bar{c}$	0.009	0.009	0.042	0.811	0.021	0.028	0.006	0.017	0.013	0.007	0.037
	s	0.002	0.001	0.013	0.012	0.646	0.077	0.021	0.058	0.053	0.037	0.080
	$\bar{s}$	0.001	0.002	0.011	0.013	0.079	0.644	0.057	0.020	0.037	0.054	0.081
	u	0.001	0.002	0.010	0.006	0.024	0.075	0.442	0.053	0.098	0.185	0.103
	$\bar{u}$	0.002	0.001	0.006	0.010	0.076	0.024	0.054	0.440	0.187	0.097	0.102
	d	0.002	0.002	0.007	0.011	0.062	0.056	0.092	0.180	0.408	0.077	0.104
	$\bar{d}$	0.001	0.002	0.011	0.007	0.056	0.061	0.181	0.091	0.077	0.407	0.105
	g	0.013	0.013	0.023	0.024	0.051	0.050	0.050	0.049	0.045	0.044	0.639
		b	$\bar{b}$	c	$\bar{c}$	s	$\bar{s}$	u	$\bar{u}$	d	$\bar{d}$	g
		Predicted										

Herwig: 0.606

CEPC		TDR Fast Herwig ParT TruthID										
Truth	b	0.831	0.115	0.020	0.015	0.002	0.001	0.001	0.001	0.001	0.001	0.012
	$\bar{b}$	0.117	0.829	0.015	0.021	0.001	0.002	0.001	0.001	0.001	0.001	0.012
	c	0.007	0.009	0.819	0.045	0.027	0.021	0.013	0.005	0.005	0.010	0.039
	$\bar{c}$	0.008	0.007	0.043	0.822	0.021	0.027	0.005	0.012	0.011	0.005	0.039
	s	0.001	0.001	0.014	0.014	0.618	0.085	0.018	0.065	0.043	0.044	0.098
	$\bar{s}$	0.001	0.001	0.014	0.016	0.084	0.616	0.065	0.017	0.047	0.040	0.098
	u	0.001	0.001	0.010	0.006	0.023	0.092	0.366	0.048	0.104	0.226	0.122
	$\bar{u}$	0.001	0.001	0.006	0.011	0.091	0.023	0.046	0.370	0.230	0.099	0.122
	d	0.001	0.001	0.007	0.011	0.049	0.070	0.078	0.181	0.396	0.082	0.124
	$\bar{d}$	0.001	0.001	0.011	0.006	0.072	0.049	0.180	0.080	0.085	0.392	0.125
	g	0.007	0.007	0.020	0.020	0.062	0.061	0.056	0.055	0.057	0.052	0.602
		b	$\bar{b}$	c	$\bar{c}$	s	$\bar{s}$	u	$\bar{u}$	d	$\bar{d}$	g
		Predicted										

Eff: b 98.5%; c 98%; s 88%;

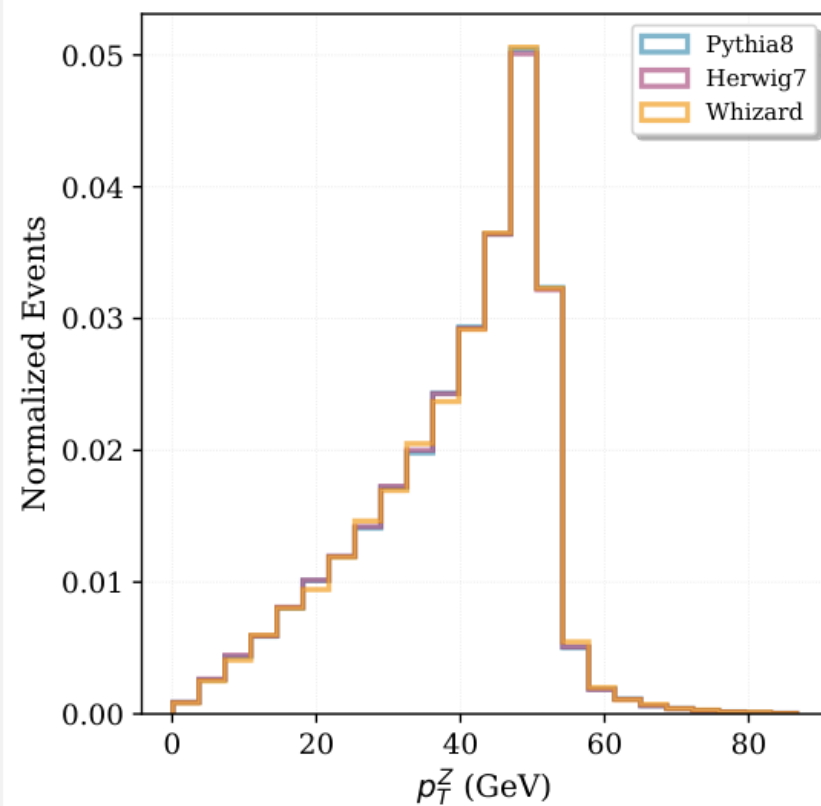
Due to B0 mason fluctuation, percent level charge mis-id rate.



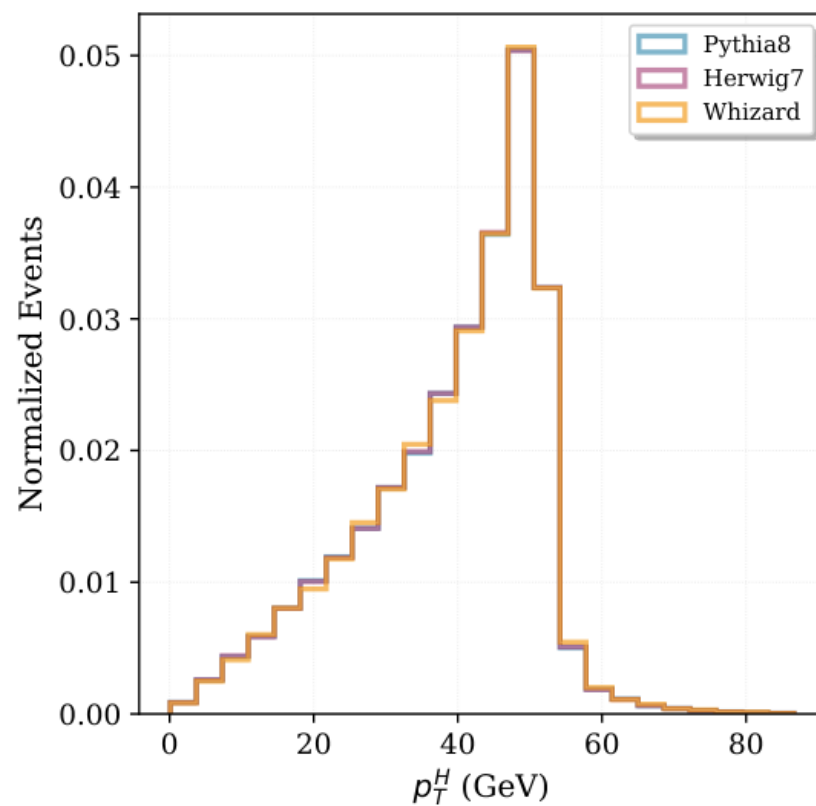
- Perfect Geometry/Vertex + Perfect ID:
 - 0.74380
- TDR Geometry + Perfect ID:
 - 0.5935
- TDR Geometry + Reco ID:
 - 0.5562

Event Generator Comparison: $e^+e^- \rightarrow ZH$ at $\sqrt{s} = 240$ GeV

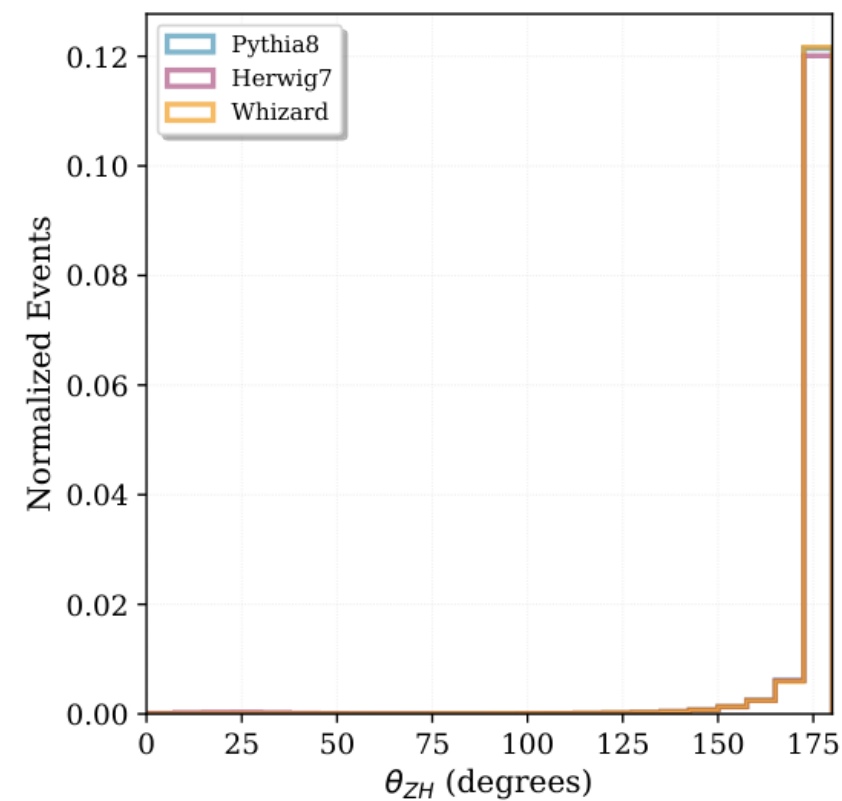
Z Boson Transverse Momentum



Higgs Boson Transverse Momentum



Z-H Angle



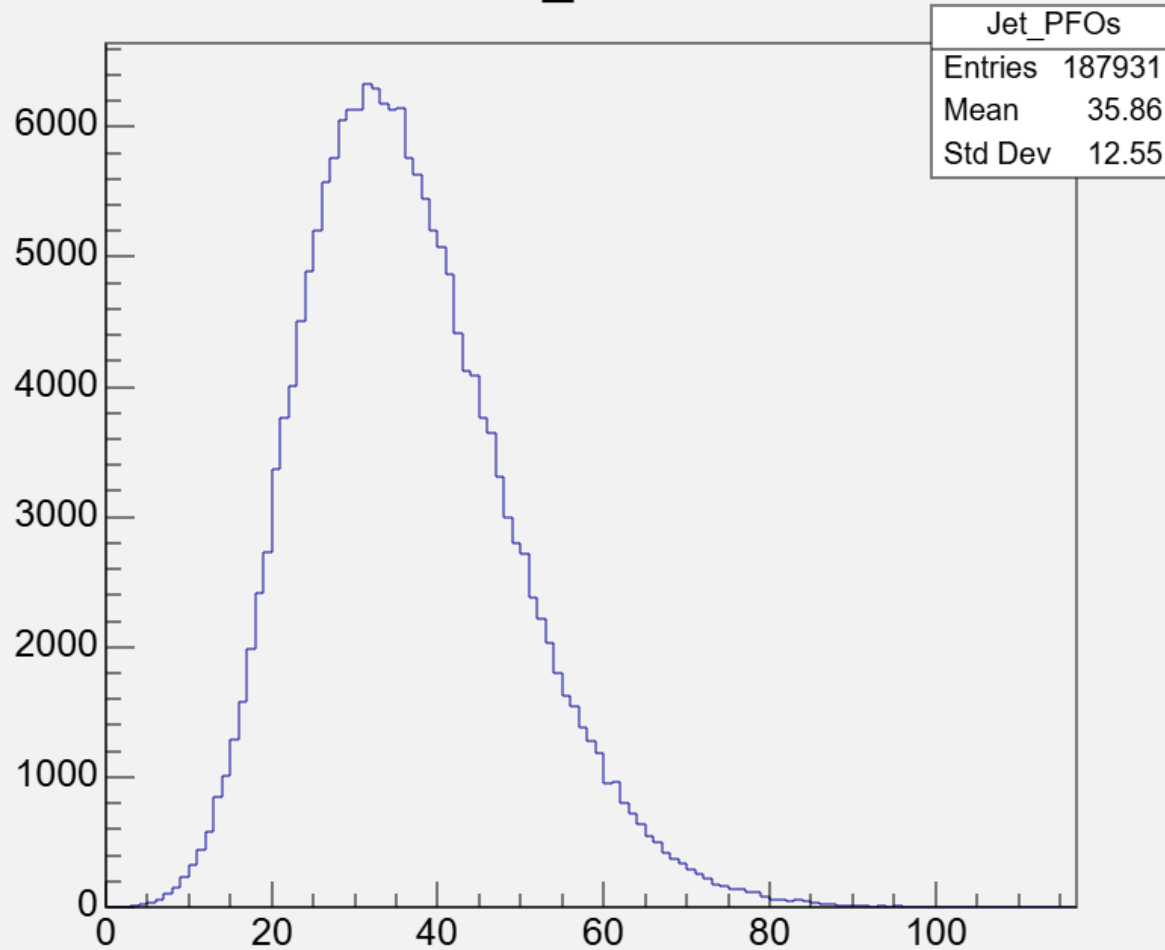
In one ZH->vvgg jet:

Truth(Charged, Neutral) = 17, 20;
Reco (Charged, Neutral) = 18, 28;

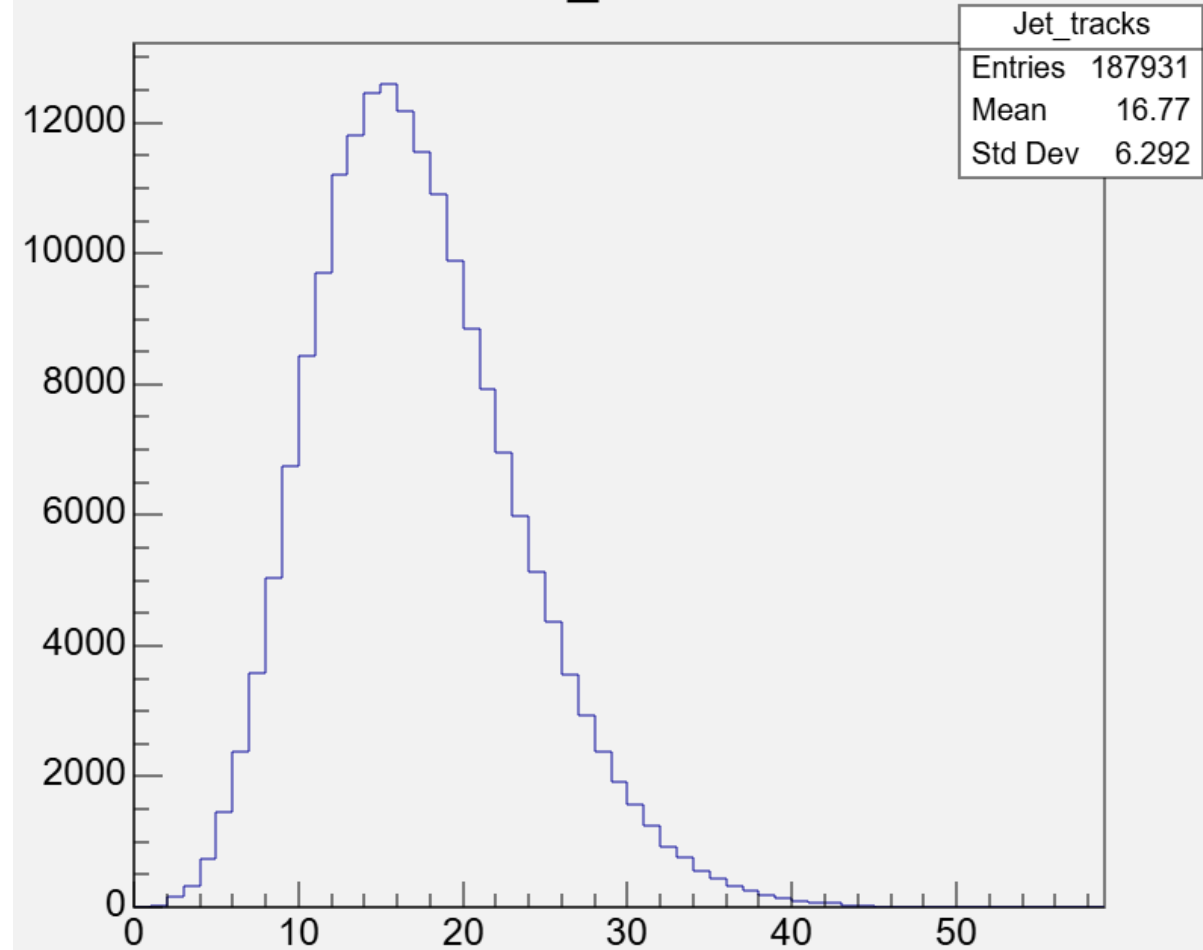
Track +1; Neutral +8; Total +9.
Different generator in 10%.

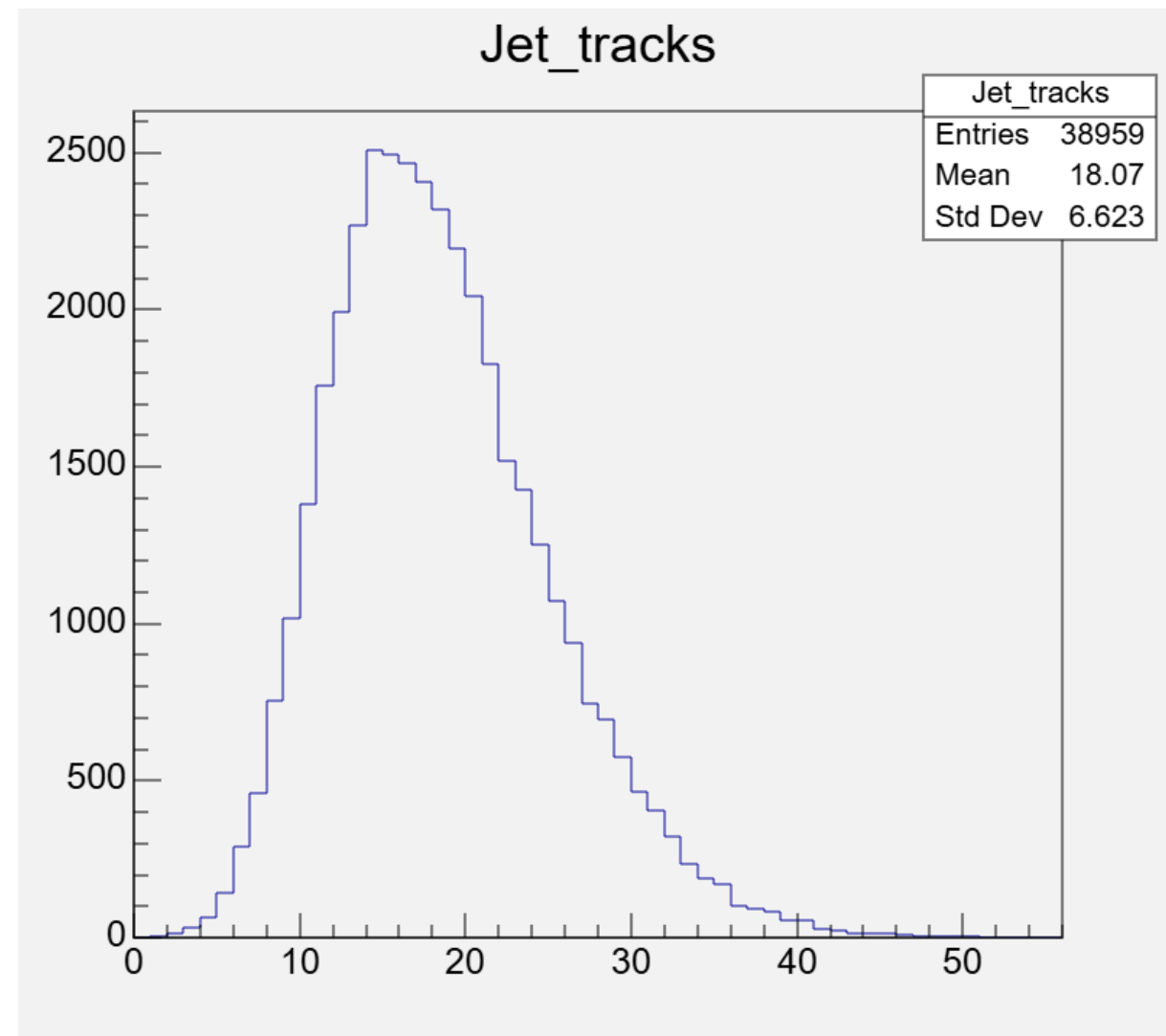
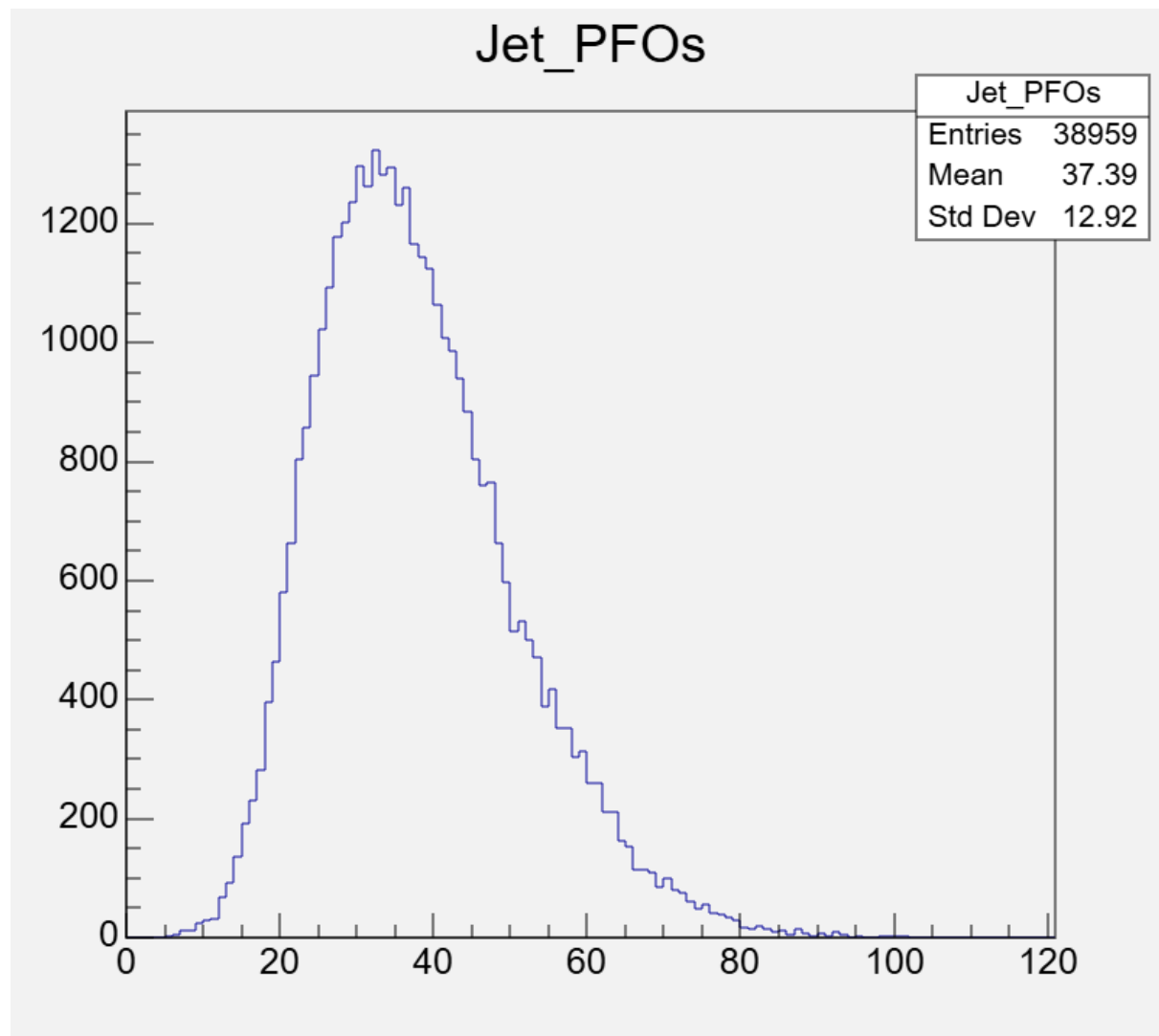
	MadGraph+Pythia8	MadGraph+Herwig7	Whizard+Pythia6
N_PFOs_Truth	37.39	38.71	35.86
N_PFOs_Reco	47.38	45.84	43.17
N_Tracks_Truth	18.07	18.48	16.77
N_Tracks_Reco	18.92	18.46	16.98

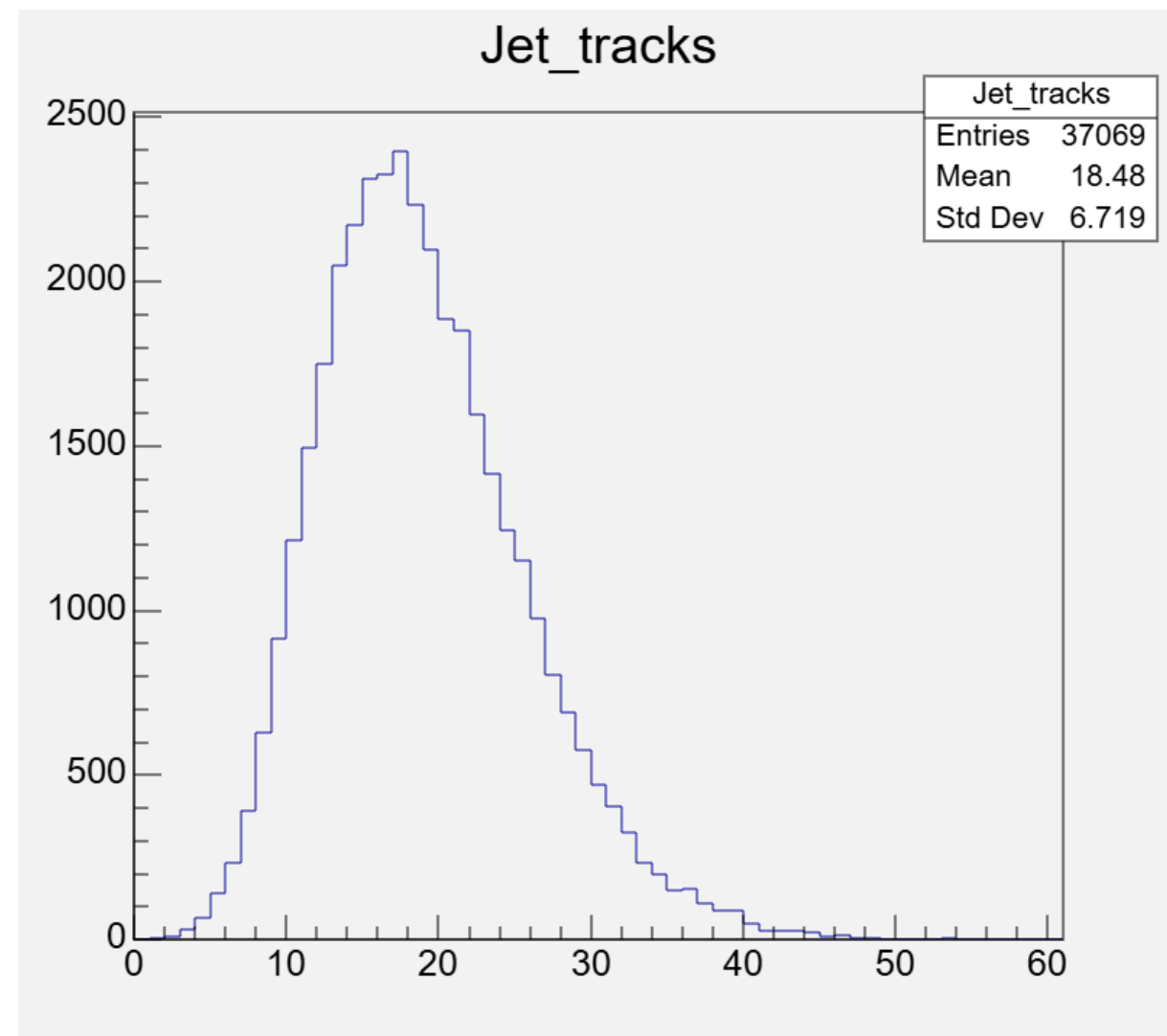
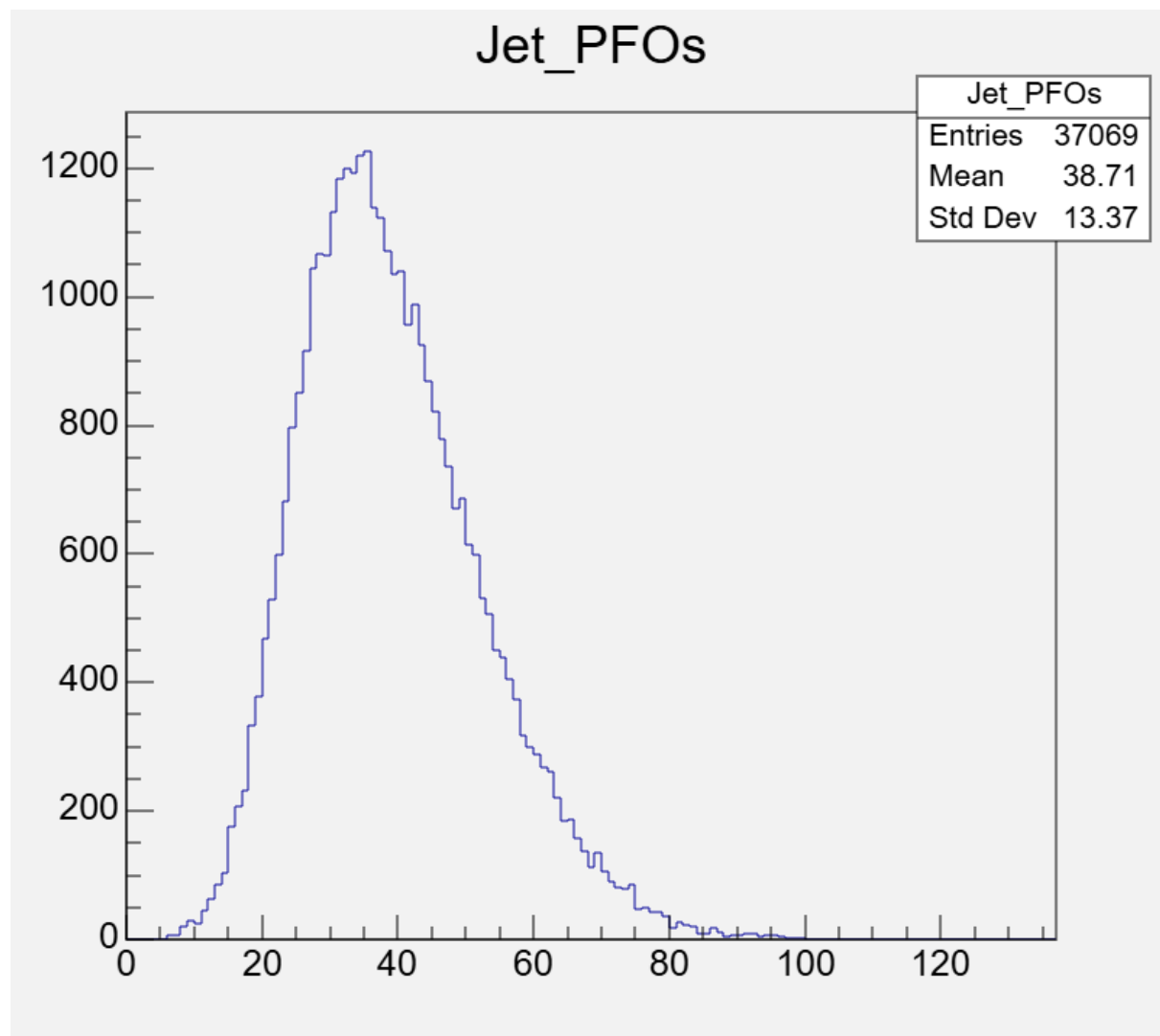
Jet_PFOs



Jet_tracks



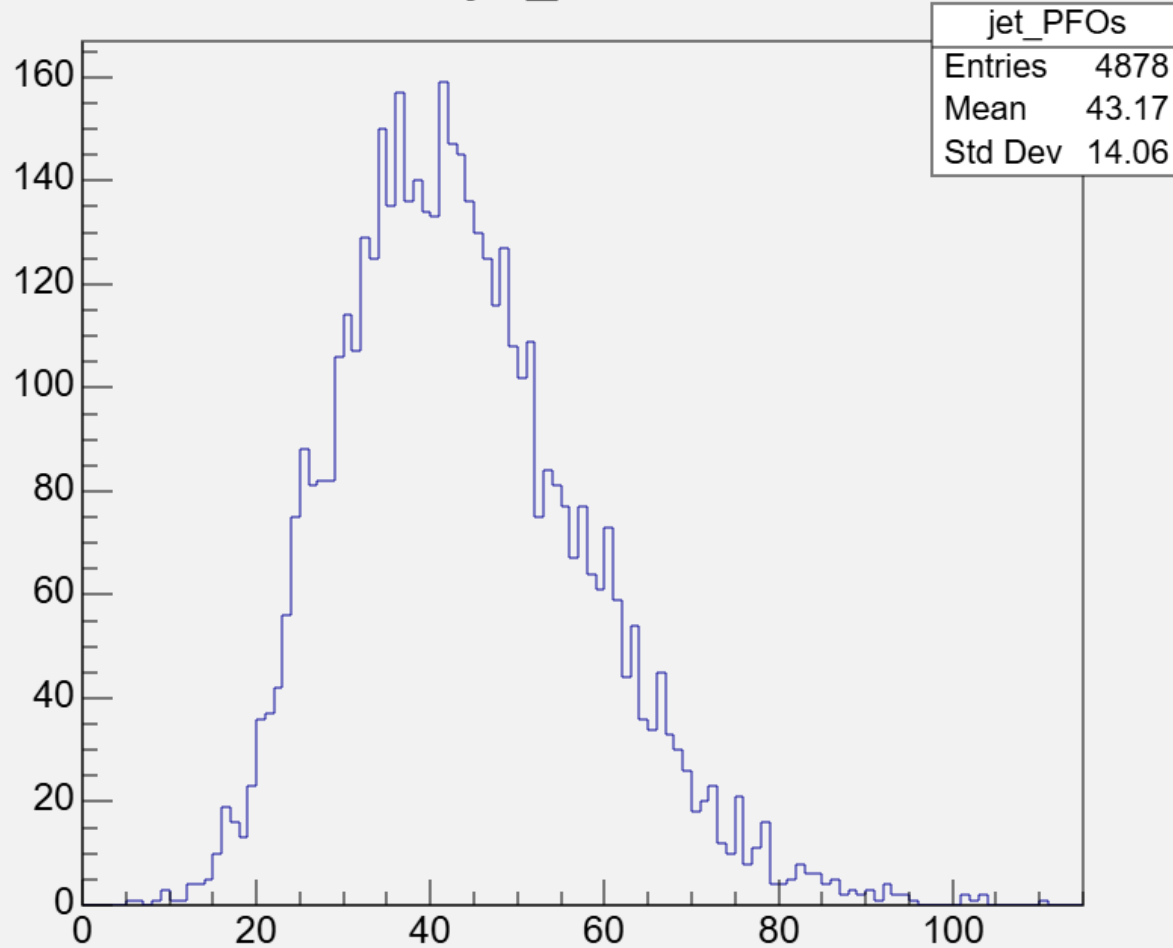




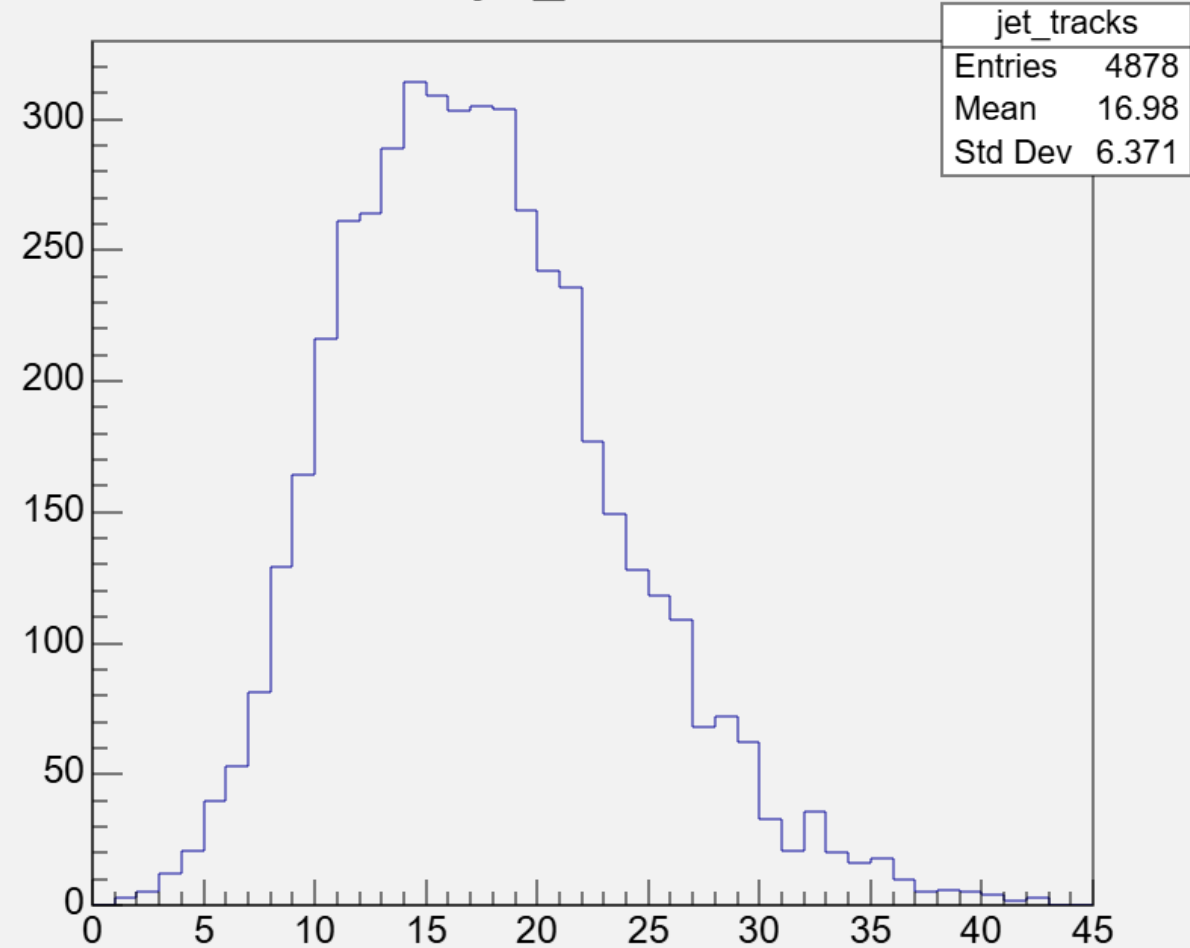
Whizard Full



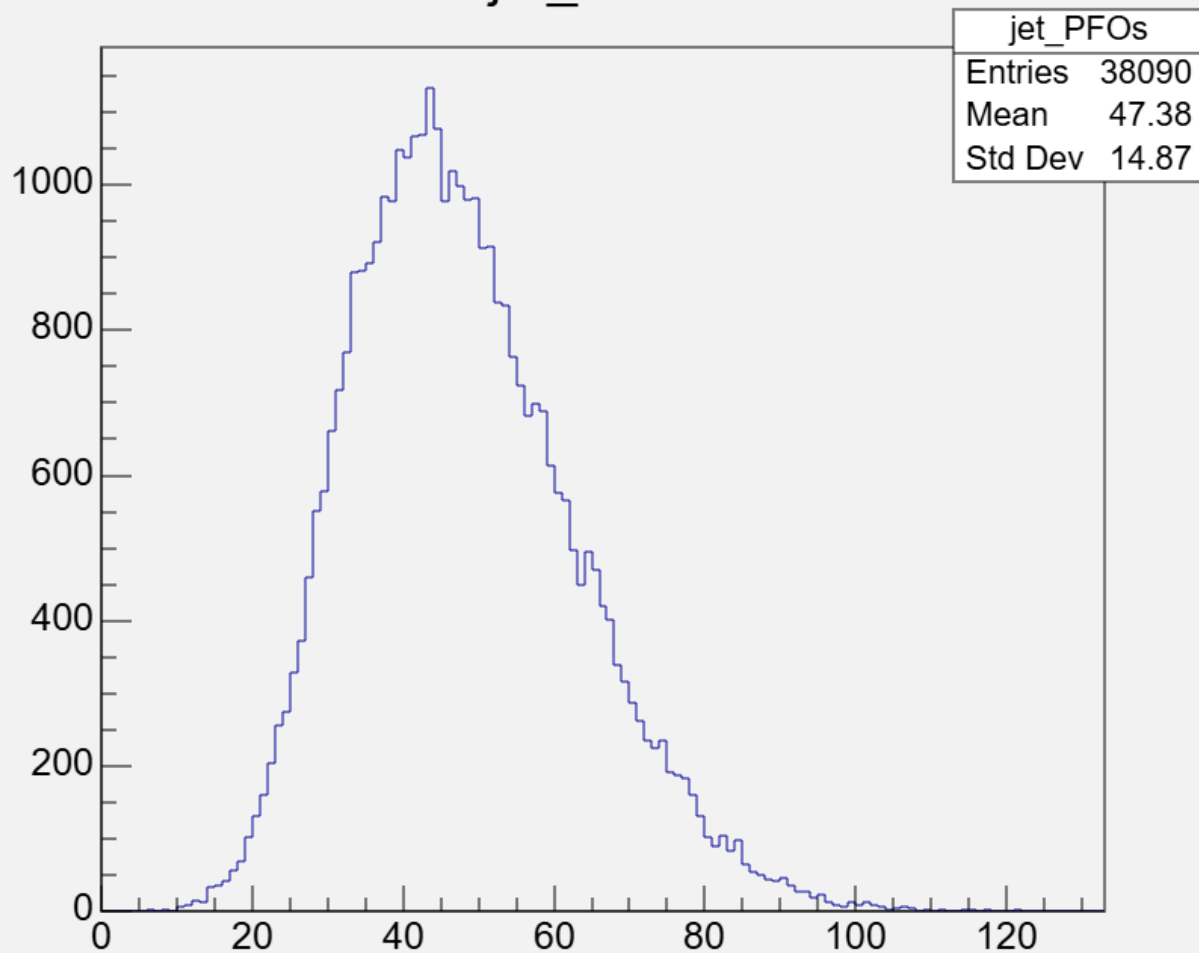
jet_PFOs



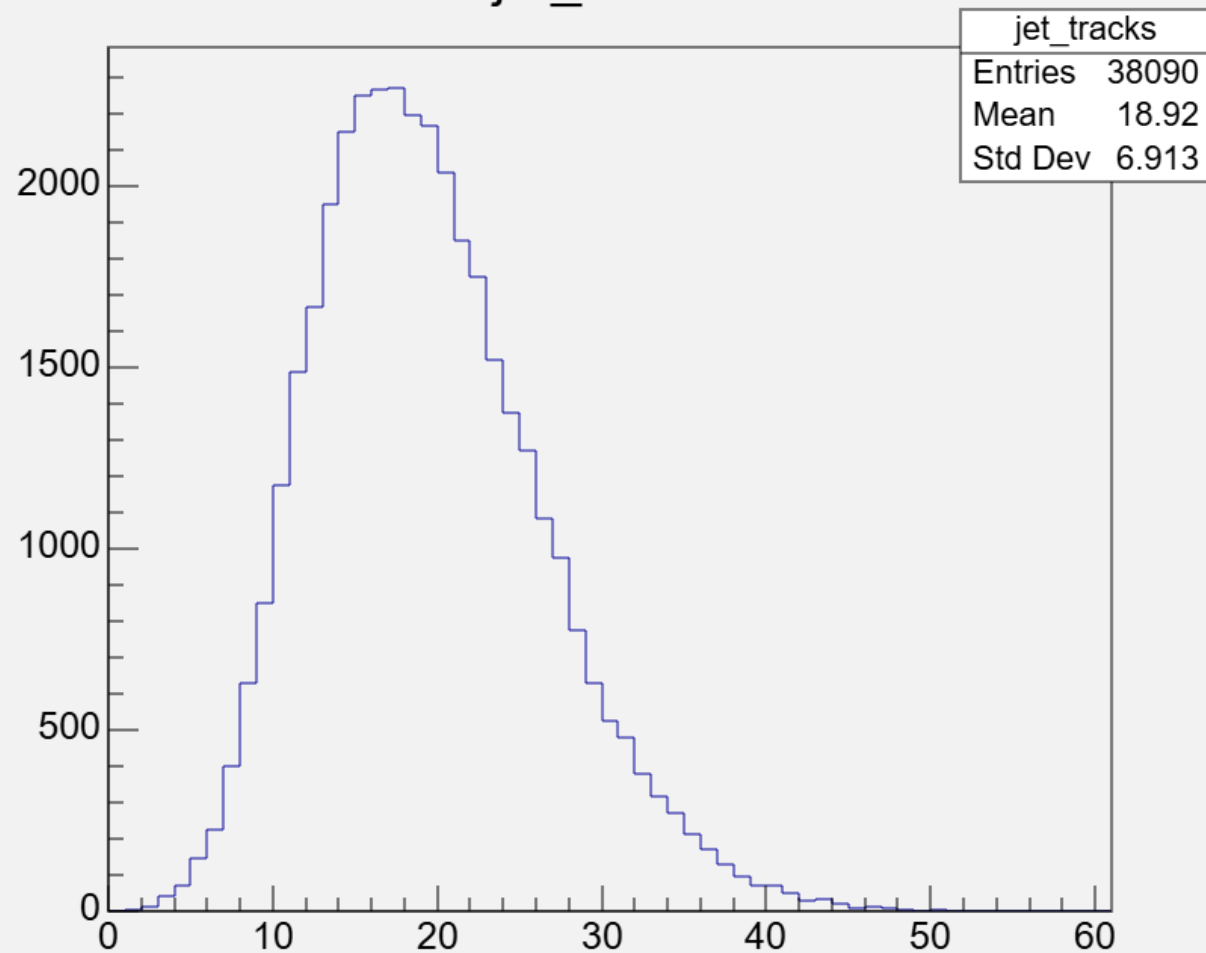
jet_tracks



jet_PFOs



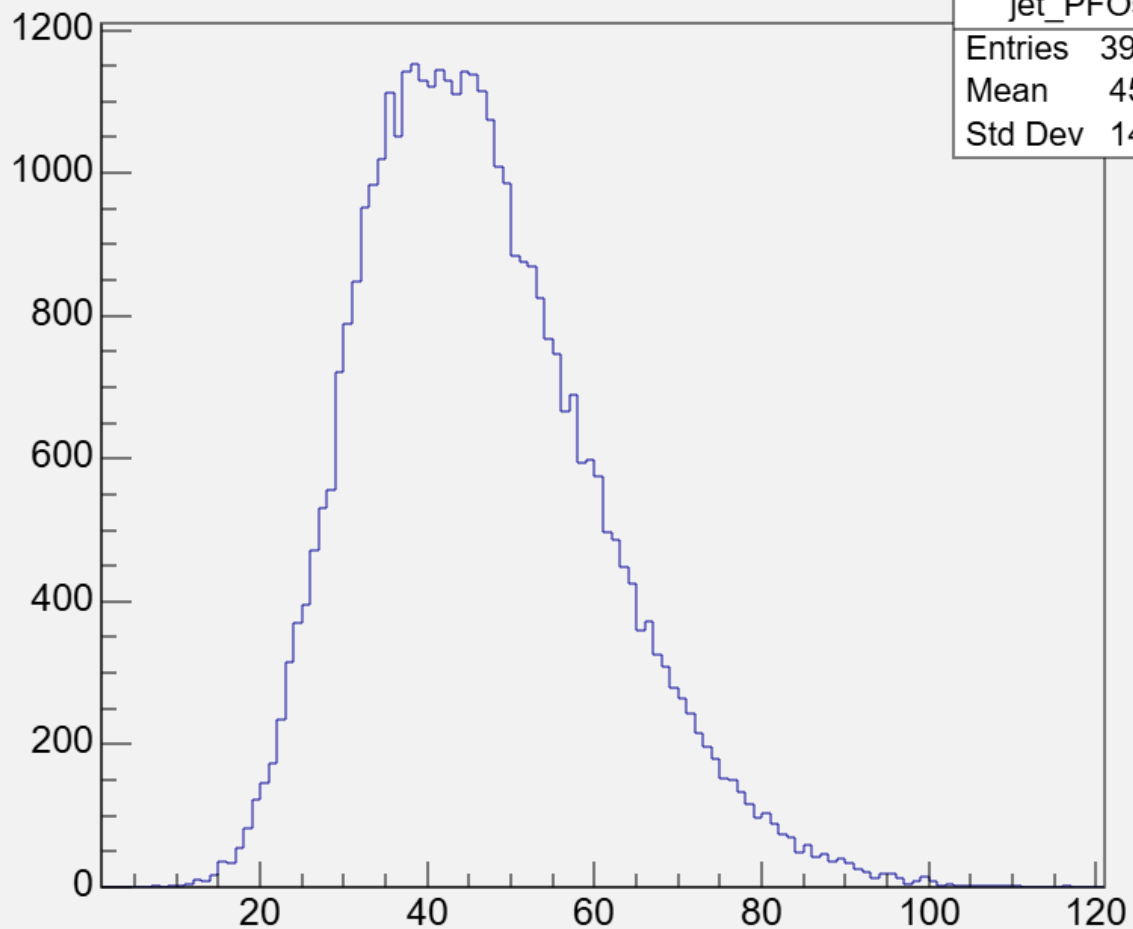
jet_tracks



Herwig Full



jet_PFOs



jet_tracks

