

Status of 4Top analysis

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Normalization

- We apply FixedWP b-tagging SF in 1Tau0L/1Tau3L/2Tau0L and b-tagging shape SF in 1Tau1L/1Tau2L/2Tau1L/2Tau2L.

- Events weight :

$$W_i = W_{gen} * W_{prefire} * W_{PU} * W_{e, reco, id} * W_{mu, reco, id, iso} * W_{tau, id} * W_{btag}$$

- normalization in 1Tau0L/1Tau3L/2Tau0L

$$yield = lumi * cross_section \frac{\sum_{pass} W_i}{\sum_{total} W_{gen}}$$

- normalization in 1Tau1L/1Tau2L/2Tau1L/2Tau2L

$$yield = lumi * cross_section \frac{\sum_{pass} W_i}{\sum_{total} W_{gen} * W_{btag}}$$

- The uncertainty of shape SF is much larger than fixedWP SF.
- In my tables and plots, HT cut is 400 GeV. It should be 450 GeV. I will correct it in next iteration.

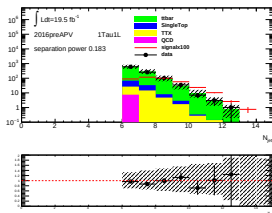
Expected yield

category	Data	signal	ttbar	Single top	TTX	QCD	(data-mc)/mc
cat1	7121.00	4.19	2567.48	181.90	72.07	2133.55	0.437
cat2	1008.00	4.01	954.65	65.10	40.86	7.54	-0.056
cat3	25.00	0.72	17.05	0.86	7.87	0.00	-0.030
cat4	1.00	0.03	0.00	0.00	0.36	0.00	1.743
cat5	103.00	0.17	64.00	5.03	5.52	3.56	0.319
cat6	2.00	0.08	4.73	0.01	1.77	0.00	-0.693
cat7	0.00	0.01	0.00	-0.00	0.11	0.00	-1.000

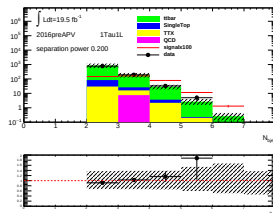
Table: 2016preAPV, corresponding to 19.5 fb^{-1}

category	Data	signal	ttbar	Single top	TTX	QCD	(data-mc)/mc
cat1	5722.00	3.30	2041.00	136.63	56.96	898.71	0.826
cat2	758.00	2.86	674.63	42.07	39.05	0.00	0.003
cat3	15.00	0.54	12.05	0.17	7.29	0.00	-0.231
cat4	0.00	0.03	0.02	0.00	0.53	0.00	-1.000
cat5	89.00	0.14	46.94	5.47	4.09	4.70	0.454
cat6	4.00	0.06	3.26	0.04	1.59	0.00	-0.181
cat7	0.00	0.00	0.00	-0.00	0.16	0.00	-1.000

Table: 2016postAPV, corresponding to 16.5 fb^{-1}

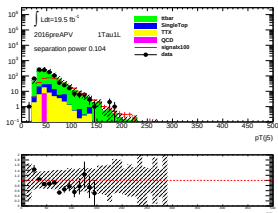


(a) N_{jet}

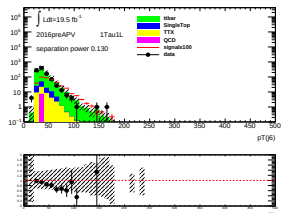


(b) N_{bjet}

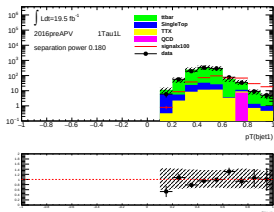
2016preAPV 1Tau1L



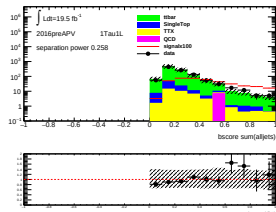
(a) pT_{j5}



(b) pT_{j6}

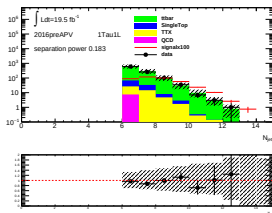


(c) average of 4 highest b score

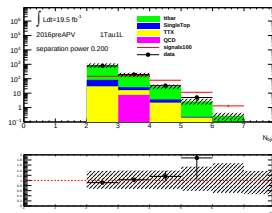


(d) geometrical average fo 4 highest b score

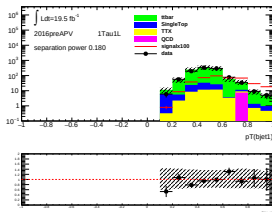
2016preAPV 1Tau2L



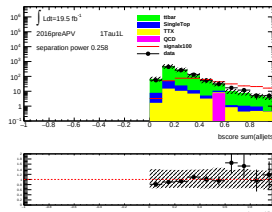
(a) N_{jet}



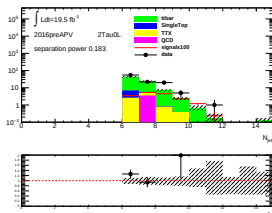
(b) N_{bjet}



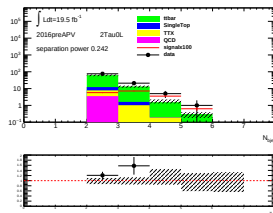
(c) average of 4 highest bscore



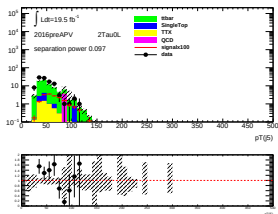
(d) geometrical average of 4 highest bscore



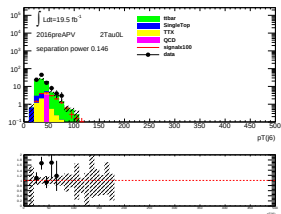
(a) N_{jet}



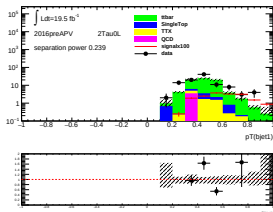
(b) N_{bjet}



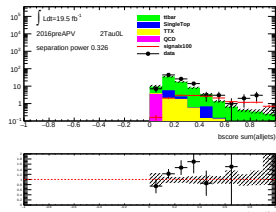
(a) pT_{j5}



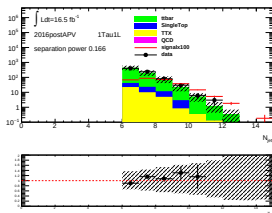
(b) pT_{j6}



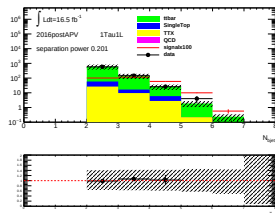
(c) average of 4 highest b score



(d) geometrical average fo 4 highest b score

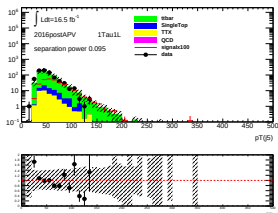


(a) N_{jet}

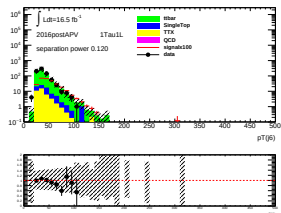


(b) N_{bjet}

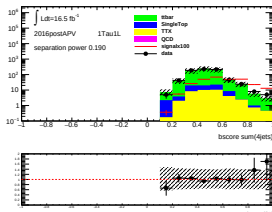
2016postAPV 1Tau1L



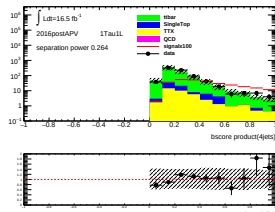
(a) pT_{j5}



(b) pT_{j6}

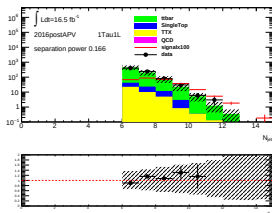


(c) average of 4 highest b score

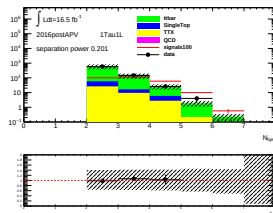


(d) geometrical average fo 4 highest b score

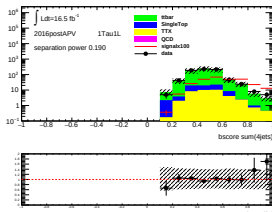
2016postAPV 1Tau2L



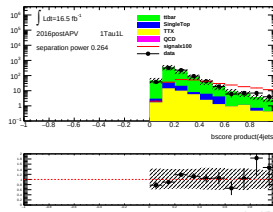
(a) N_{jet}



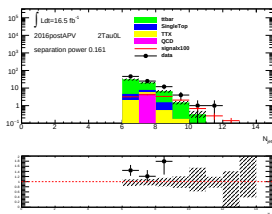
(b) N_{bjet}



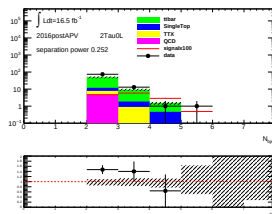
(c) average of 4 highest bscore



(d) geometrical average of 4 highest bscore

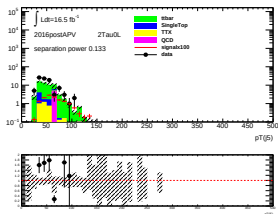


(a) N_{jet}

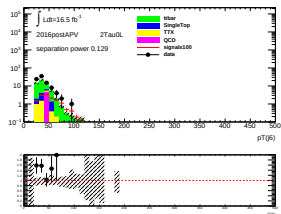


(b) N_{bjet}

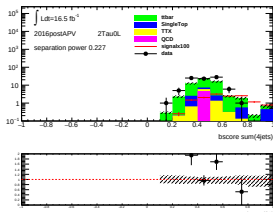
2016postAPV 2Tau0L



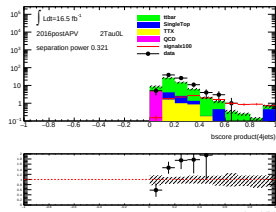
(a) pT_{j5}



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(c) average of 4 highest b score



(d) geometrical average of 4 highest b score