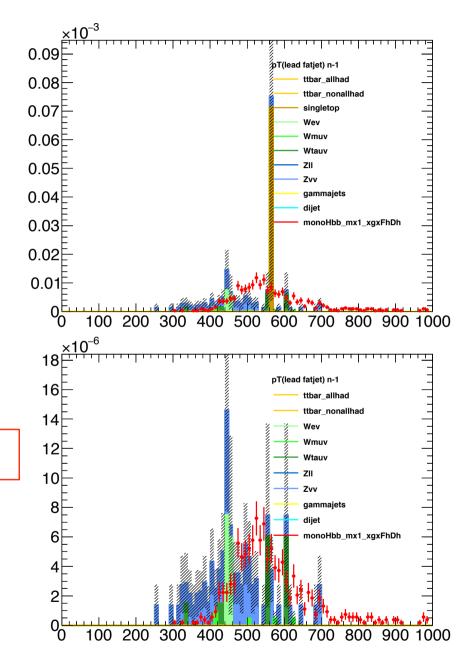
Mono-H n-1 plots

pT(lead fatjet) n-1

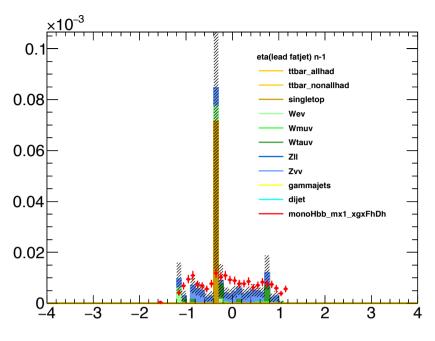


Single top

removed

Selection	Cut applied
MET > 250 GeV	Υ
>= 1 fat jet: pT > 250 eta < 1.2)	
Electron veto	Υ
Muon veto	Υ
Remove jet overlapping el: pt > 20 eta < 4.5	Υ
<= 1 antikt4 jet with: pT > 40, eta < 4.5, dR(lead fat jet) > 0.9	Υ
Veto events with antikt4 jet: pt > 20 eta < 2.5 dPhi(MET, antikt jet) > 0.4	Υ
MET > 500	Υ
Mono-H	
90 < m(fj) < 145	Υ
2 antikt jets: pt > 20 eta < 2.5 dR (fat jet) < 1.0	Υ
2 antikt subjets: b-tag MV1 > 0.971966	Υ

eta(lead fatjet) n-1

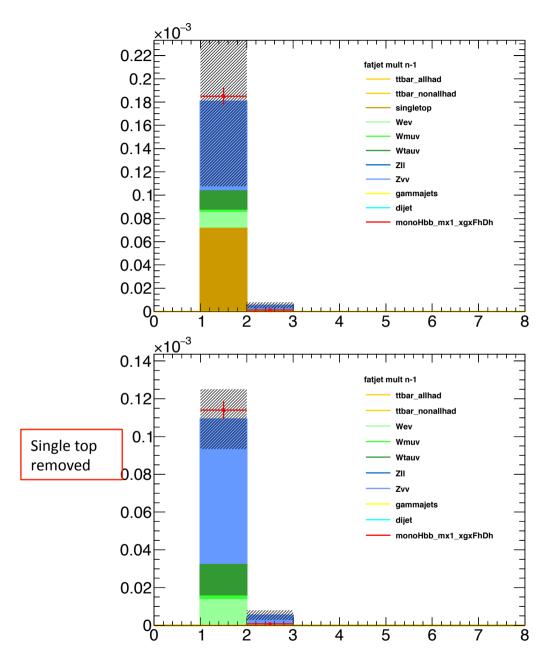




×10 ⁻ °	
16 -	
14	eta(lead fatjet) n-1
` ' -	ttbar_nonallhad -
12	ttbar_nonallhad
10	Wmuv
10	2
8 -	Zvvgammajets
	dijet
6 <u>-</u>	monoHbb_mx1_xgxFhDh
4	
E	Ţ
2_	
0 -	
-4 -3 -2	_1 0 1 2 3 4

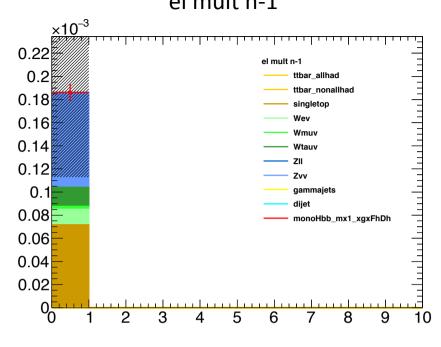
Selection	Cut applied
MET > 250 GeV	Υ
>= 1 fat jet: pT > 250 eta < 1.2)	
Electron veto	Υ
Muon veto	Υ
Remove jet overlapping el: pt > 20 eta < 4.5	Υ
<= 1 antikt4 jet with: pT > 40, eta < 4.5, dR(lead fat jet) > 0.9	Υ
Veto events with antikt4 jet: pt > 20 eta < 2.5 dPhi(MET, antikt jet) > 0.4	Υ
MET > 500	Υ
Mono-H	
90 < m(fj) < 145	Υ
2 antikt jets: pt > 20 eta < 2.5 dR (fat jet) < 1.0	Υ
2 antikt subjets: b-tag MV1 > 0.971966	Υ

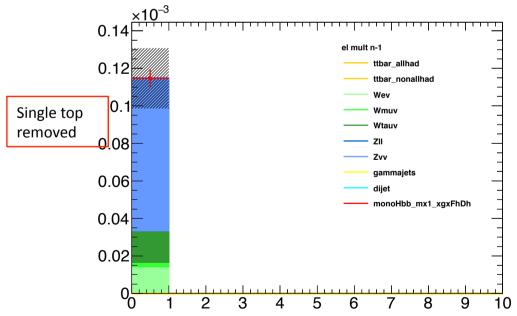
fatjet mult n-1



Selection	Cut applied
MET > 250 GeV	Υ
>= 1 fat jet: pT > 250 eta < 1.2)	pT, eta cuts applied
Electron veto	Υ
Muon veto	Υ
Remove jet overlapping el: pt > 20 eta < 4.5	Υ
<= 1 antikt4 jet with: pT > 40, eta < 4.5, dR(lead fat jet) > 0.9	Υ
Veto events with antikt4 jet: pt > 20 eta < 2.5 dPhi(MET, antikt jet) > 0.4	Υ
MET > 500	Υ
Mono-H	
90 < m(fj) < 145	Υ
2 antikt jets: pt > 20 eta < 2.5 dR (fat jet) < 1.0	Υ
2 antikt subjets: b-tag MV1 > 0.971966	Υ

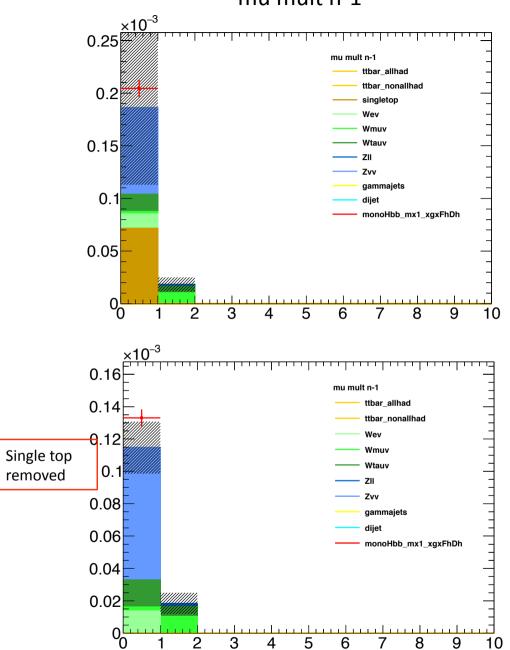
el mult n-1





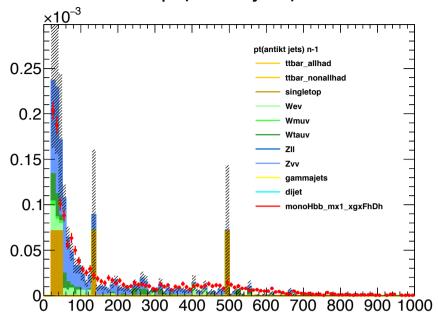
Selection	Cut applied
MET > 250 GeV	Υ
>= 1 fat jet: pT > 250 eta < 1.2)	Υ
Electron veto	
Muon veto	Υ
Remove jet overlapping el: pt > 20 eta < 4.5	Υ
<= 1 antikt4 jet with: pT > 40, eta < 4.5, dR(lead fat jet) > 0.9	Υ
Veto events with antikt4 jet: pt > 20 eta < 2.5 dPhi(MET, antikt jet) > 0.4	Υ
MET > 500	Υ
Mono-H	
90 < m(fj) < 145	Υ
2 antikt jets: pt > 20 eta < 2.5 dR (fat jet) < 1.0	Υ
2 antikt subjets: b-tag MV1 > 0.971966	Υ

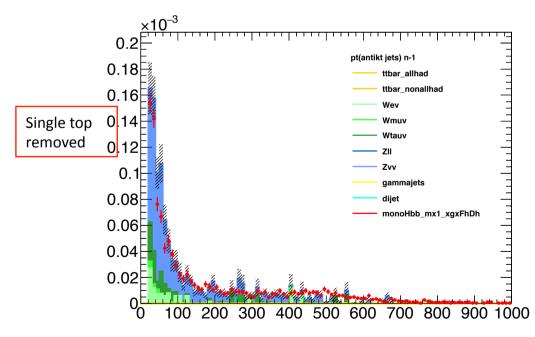
mu mult n-1



Selection	Cut applied
MET > 250 GeV	Υ
>= 1 fat jet: pT > 250 eta < 1.2)	Υ
Electron veto	Υ
Muon veto	
Remove jet overlapping el: pt > 20 eta < 4.5	Y
<= 1 antikt4 jet with: pT > 40, eta < 4.5, dR(lead fat jet) > 0.9	Υ
Veto events with antikt4 jet: pt > 20 eta < 2.5 dPhi(MET, antikt jet) > 0.4	Υ
MET > 500	Υ
Mono-H	
90 < m(fj) < 145	Υ
2 antikt jets: pt > 20 eta < 2.5 dR (fat jet) < 1.0	Υ
2 antikt subjets: b-tag MV1 > 0.971966	Υ

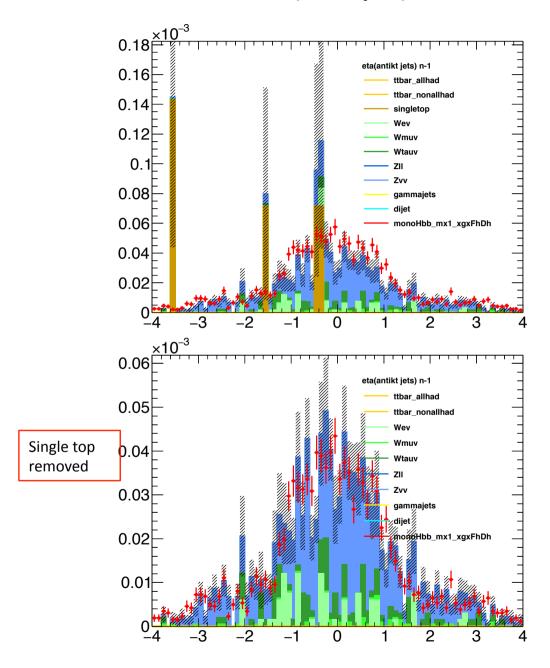
pt(antikt jets) n-1





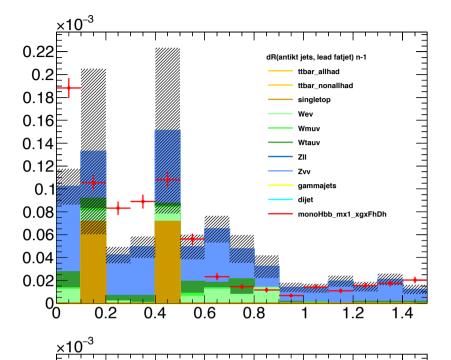
Selection	Cut applied
MET > 250 GeV	Υ
>= 1 fat jet: pT > 250 eta < 1.2)	Υ
Electron veto	Υ
Muon veto	Υ
Remove jet overlapping el: pt > 20 eta < 4.5	Υ
<= 1 antikt4 jet with: pT > 40, eta < 4.5, dR(lead fat jet) > 0.9	pT > 20, eta < 4.5
Veto events with antikt4 jet: pt > 20 eta < 2.5 dPhi(MET, antikt jet) > 0.4	Υ
MET > 500	Υ
Mono-H	
90 < m(fj) < 145	Υ
2 antikt jets: pt > 20 eta < 2.5 dR (fat jet) < 1.0	Υ
2 antikt subjets: b-tag MV1 > 0.971966	Υ

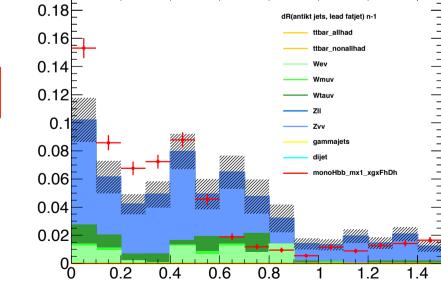
eta(antikt jets) n-1



Selection	Cut applied
MET > 250 GeV	Υ
>= 1 fat jet: pT > 250 eta < 1.2)	Υ
Electron veto	Υ
Muon veto	Υ
Remove jet overlapping el: pt > 20 eta < 4.5	Υ
<= 1 antikt4 jet with: pT > 40, eta < 4.5, dR(lead fat jet) > 0.9	pT > 20, eta < 4.5
Veto events with antikt4 jet: pt > 20 eta < 2.5 dPhi(MET, antikt jet) > 0.4	Υ
MET > 500	Υ
Mono-H	
90 < m(fj) < 145	Υ
2 antikt jets: pt > 20 eta < 2.5 dR (fat jet) < 1.0	Υ
2 antikt subjets: b-tag MV1 > 0.971966	Υ

dR(antikt jets, lead fatjet) n-1

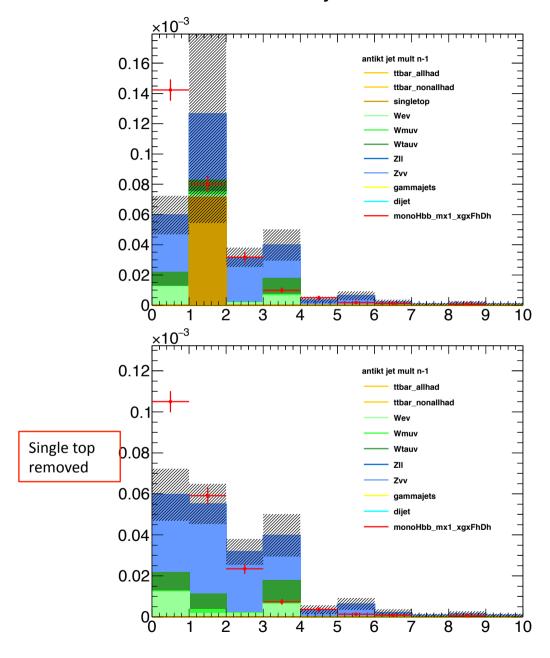




	0.18 —			dD/ontikt	jets, lead fatjet) n-1	-
	F			-	ttbar_allhad	
	0.16				ttbar_nonallhad	_
	0.14				Wev	-
Single top removed	0.12				Wmuv Wtauv	_
Temovea	0.1				ZII Zvv	-
	0.08				gammajets dijet	_
	0.06				monoHbb_mx1_xgxF	hDh _
	0.04					_
	0.02	_				
	0					
	()	02 04	0.6	በ ጸ	1 12	1 4

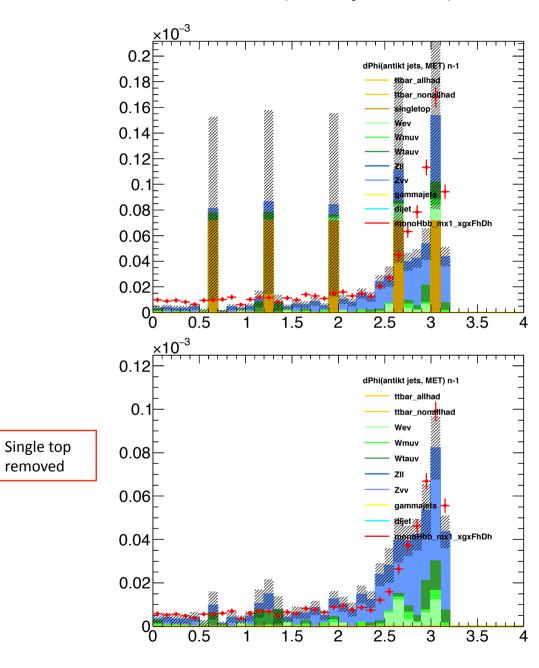
Selection	Cut applied
MET > 250 GeV	Υ
>= 1 fat jet: pT > 250 eta < 1.2)	Υ
Electron veto	Υ
Muon veto	Υ
Remove jet overlapping el: pt > 20 eta < 4.5	Υ
<= 1 antikt4 jet with: pT > 40, eta < 4.5, dR(lead fat jet) > 0.9	pT > 20, eta < 4.5
Veto events with antikt4 jet: pt > 20 eta < 2.5 dPhi(MET, antikt jet) > 0.4	Υ
MET > 500	Υ
Mono-H	
90 < m(fj) < 145	Υ
2 antikt jets: pt > 20 eta < 2.5 dR (fat jet) < 1.0	Υ
2 antikt subjets: b-tag MV1 > 0.971966	Υ

antikt jet mult n-1



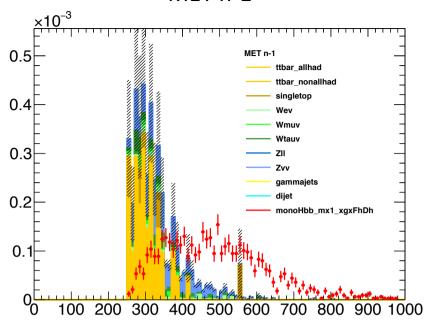
Selection	Cut applied
MET > 250 GeV	Υ
>= 1 fat jet: pT > 250 eta < 1.2)	Υ
Electron veto	Υ
Muon veto	Υ
Remove jet overlapping el: pt > 20 eta < 4.5	Υ
<= 1 antikt4 jet with: pT > 40, eta < 4.5, dR(lead fat jet) > 0.9	pT, eta, dR cuts applied
Veto events with antikt4 jet: pt > 20 eta < 2.5 dPhi(MET, antikt jet) > 0.4	Υ
MET > 500	Υ
Mono-H	
90 < m(fj) < 145	Υ
2 antikt jets: pt > 20 eta < 2.5 dR (fat jet) < 1.0	Υ
2 antikt subjets: b-tag MV1 > 0.971966	Υ

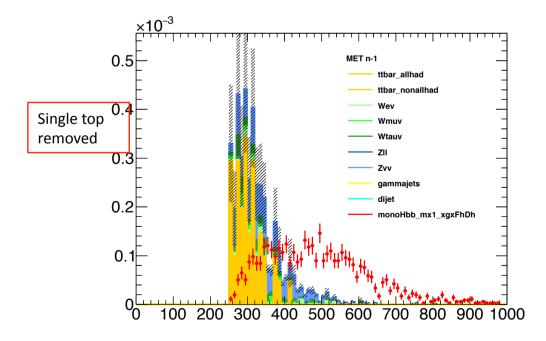
dPhi(antikt jets, MET) n-1



Selection	Cut applied
MET > 250 GeV	Υ
>= 1 fat jet: pT > 250 eta < 1.2)	Υ
Electron veto	Υ
Muon veto	Υ
Remove jet overlapping el: pt > 20 eta < 4.5	Υ
<= 1 antikt4 jet with: pT > 40, eta < 4.5, dR(lead fat jet) > 0.9	Υ
Veto events with antikt4 jet: pt > 20 eta < 2.5 dPhi(MET, antikt jet) > 0.4	pT, eta cuts applied
MET > 500	Υ
MET > 500 Mono-H	Y
	Y
Mono-H	

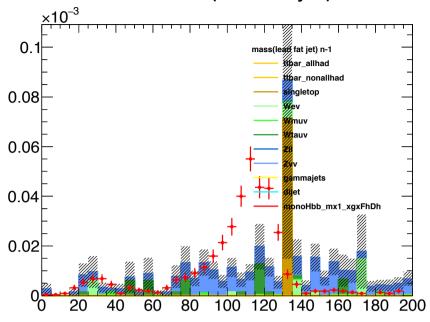
MET n-1

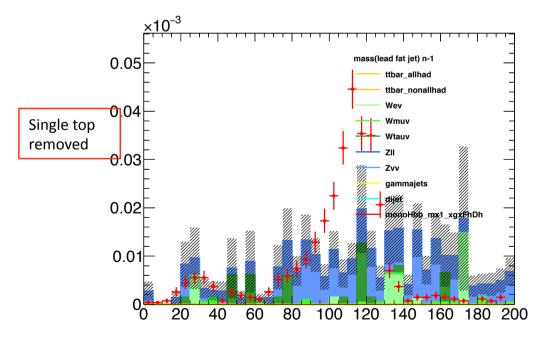




Selection	Cut applied
MET > 250 GeV	Υ
>= 1 fat jet: pT > 250 eta < 1.2)	Υ
Electron veto	Υ
Muon veto	Υ
Remove jet overlapping el: pt > 20 eta < 4.5	Υ
<= 1 antikt4 jet with: pT > 40, eta < 4.5, dR(lead fat jet) > 0.9	Υ
Veto events with antikt4 jet: pt > 20 eta < 2.5 dPhi(MET, antikt jet) > 0.4	Υ
MET > 500	
Mono-H	
90 < m(fj) < 145	Υ
2 antikt jets: pt > 20 eta < 2.5 dR (fat jet) < 1.0	Υ
2 antikt subjets: b-tag MV1 > 0.971966	Υ

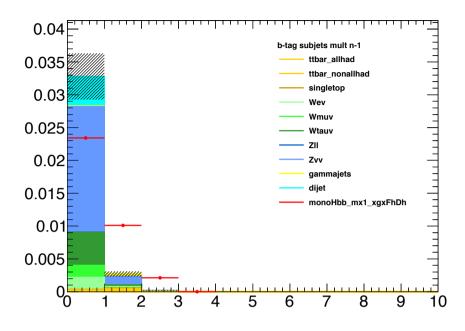
mass(lead fat jet)n-1

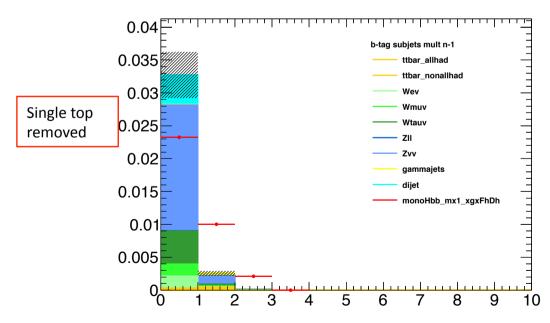




Selection	Cut applied
MET > 250 GeV	Υ
>= 1 fat jet: pT > 250 eta < 1.2)	Υ
Electron veto	Υ
Muon veto	Υ
Remove jet overlapping el: pt > 20 eta < 4.5	Υ
<= 1 antikt4 jet with: pT > 40, eta < 4.5, dR(lead fat jet) > 0.9	Υ
Veto events with antikt4 jet: pt > 20 eta < 2.5 dPhi(MET, antikt jet) > 0.4	Υ
MET > 500	Υ
Mono-H	
90 < m(fj) < 145	
2 antikt jets: pt > 20 eta < 2.5 dR (fat jet) < 1.0	Υ
2 antikt subjets: b-tag MV1 > 0.971966	Υ

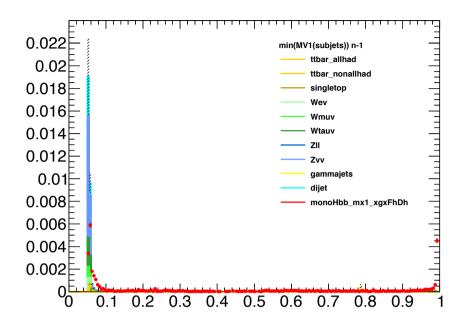
b-tag subjets mult n-1

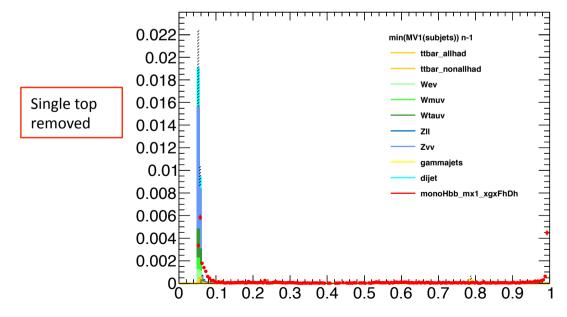




Selection	Cut applied
MET > 250 GeV	Υ
>= 1 fat jet: pT > 250 eta < 1.2)	Υ
Electron veto	Υ
Muon veto	Υ
Remove jet overlapping el: pt > 20 eta < 4.5	Υ
<= 1 antikt4 jet with: pT > 40, eta < 4.5, dR(lead fat jet) > 0.9	Υ
Veto events with antikt4 jet: pt > 20 eta < 2.5 dPhi(MET, antikt jet) > 0.4	Υ
MET > 500	Υ
Mono-H	
90 < m(fj) < 145	Υ
2 antikt jets: pt > 20 eta < 2.5 dR (fat jet) < 1.0	
2 antikt subjets: b-tag MV1 > 0.971966	dR (fat jet) < 1.0, b-tagged

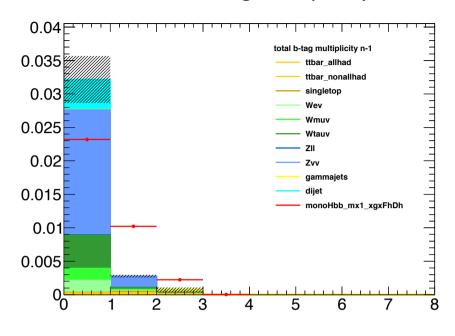
min(MV1(subjets)) n-1

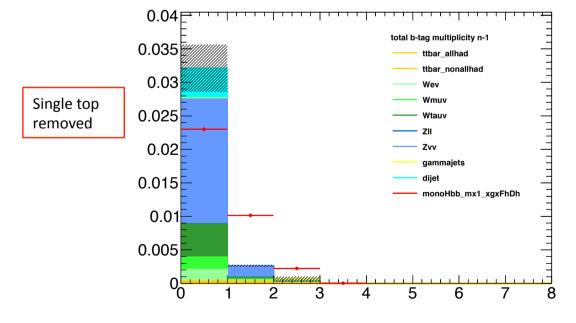




Selection	Cut applied
MET > 250 GeV	Υ
>= 1 fat jet: pT > 250 eta < 1.2)	Υ
Electron veto	Υ
Muon veto	Υ
Remove jet overlapping el: pt > 20 eta < 4.5	Υ
<= 1 antikt4 jet with: pT > 40, eta < 4.5, dR(lead fat jet) > 0.9	Υ
Veto events with antikt4 jet: pt > 20 eta < 2.5 dPhi(MET, antikt jet) > 0.4	Υ
MET > 500	Υ
Mono-H	
90 < m(fj) < 145	Υ
2 antikt jets: pt > 20 eta < 2.5 dR (fat jet) < 1.0	Υ
2 antikt subjets: b-tag MV1 > 0.971966	

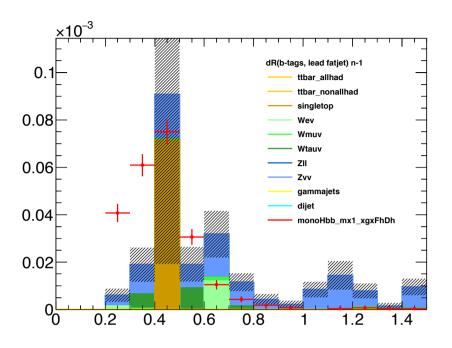
total b-tag multiplicity n-1

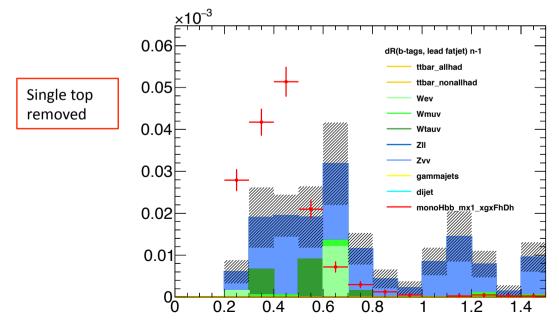




Selection	Cut applied
MET > 250 GeV	Υ
>= 1 fat jet: pT > 250 eta < 1.2)	Υ
Electron veto	Υ
Muon veto	Υ
Remove jet overlapping el: pt > 20 eta < 4.5	Υ
<= 1 antikt4 jet with: pT > 40, eta < 4.5, dR(lead fat jet) > 0.9	Υ
Veto events with antikt4 jet: pt > 20 eta < 2.5 dPhi(MET, antikt jet) > 0.4	Υ
MET > 500	Υ
Mono-H	
90 < m(fj) < 145	Υ
2 antikt jets: pt > 20 eta < 2.5 dR (fat jet) < 1.0	pT, eta cuts applied
2 antikt subjets: b-tag MV1 > 0.971966	b-tag required

(max) dR(b-tags, lead fatjet) n-1

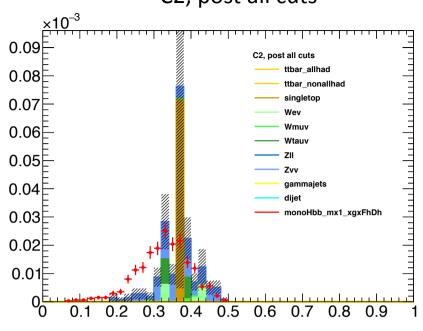


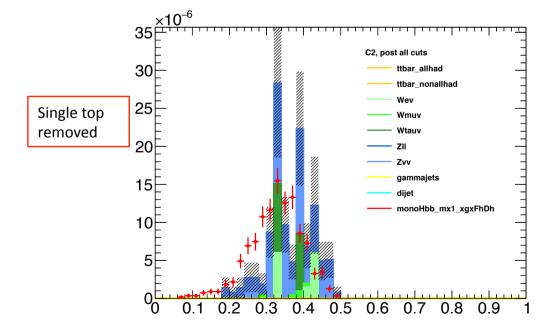


Selection	Cut applied
MET > 250 GeV	Υ
>= 1 fat jet: pT > 250 eta < 1.2)	Υ
Electron veto	Υ
Muon veto	Υ
Remove jet overlapping el: pt > 20 eta < 4.5	Υ
<= 1 antikt4 jet with: pT > 40, eta < 4.5, dR(lead fat jet) > 0.9	Υ
Veto events with antikt4 jet: pt > 20 eta < 2.5 dPhi(MET, antikt jet) > 0.4	Υ
MET > 500	Υ
Mono-H	
90 < m(fj) < 145	Υ
2 antikt jets: pt > 20 eta < 2.5 dR (fat jet) < 1.0	pT, eta cut applied
2 antikt subjets: b-tag MV1 > 0.971966	2 b-tags (not required to be subjets)

Mono-H C2, D2, Tau21

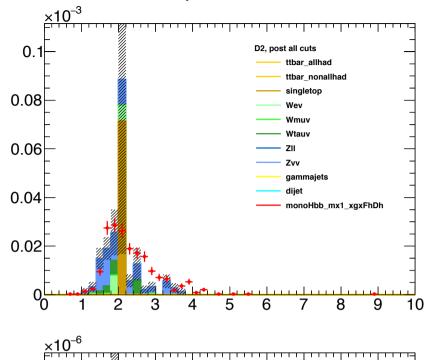
C2, post all cuts

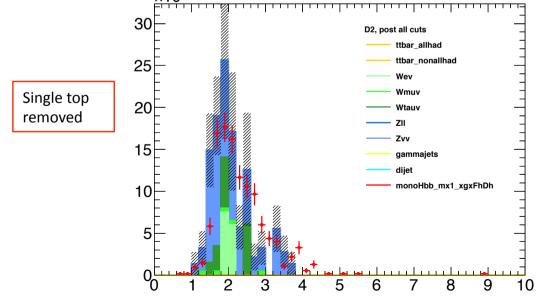




Selection	Cut applied
MET > 250 GeV	Υ
>= 1 fat jet: pT > 250 eta < 1.2)	Υ
Electron veto	Υ
Muon veto	Υ
Remove jet overlapping el: pt > 20 eta < 4.5	Υ
<= 1 antikt4 jet with: pT > 40, eta < 4.5, dR(lead fat jet) > 0.9	Υ
Veto events with antikt4 jet: pt > 20 eta < 2.5 dPhi(MET, antikt jet) > 0.4	Υ
MET > 500	Υ
Mono-H	
90 < m(fj) < 145	Υ
2 antikt jets: pt > 20 eta < 2.5 dR (fat jet) < 1.0	Υ
2 antikt subjets: b-tag MV1 > 0.971966	Υ

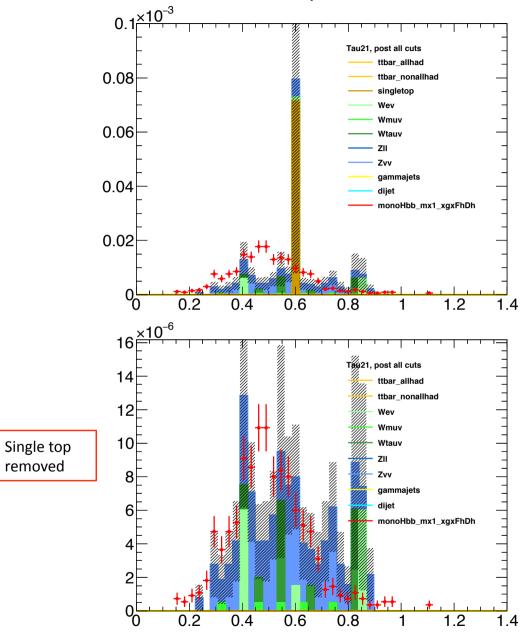
D2, post all cuts





Selection	Cut applied
MET > 250 GeV	Υ
>= 1 fat jet: pT > 250 eta < 1.2)	Υ
Electron veto	Υ
Muon veto	Υ
Remove jet overlapping el: pt > 20 eta < 4.5	Υ
<= 1 antikt4 jet with: pT > 40, eta < 4.5, dR(lead fat jet) > 0.9	Υ
Veto events with antikt4 jet: pt > 20 eta < 2.5 dPhi(MET, antikt jet) > 0.4	Υ
MET > 500	Υ
Mono-H	
90 < m(fj) < 145	Υ
2 antikt jets: pt > 20 eta < 2.5 dR (fat jet) < 1.0	Υ
2 antikt subjets: b-tag MV1 > 0.971966	Υ

Tau21, post all cuts



removed

Selection	Cut applied
MET > 250 GeV	Υ
>= 1 fat jet: pT > 250 eta < 1.2)	Υ
Electron veto	Υ
Muon veto	Υ
Remove jet overlapping el: pt > 20 eta < 4.5	Υ
<= 1 antikt4 jet with: pT > 40, eta < 4.5, dR(lead fat jet) > 0.9	Υ
Veto events with antikt4 jet: pt > 20 eta < 2.5 dPhi(MET, antikt jet) > 0.4	Υ
MET > 500	Υ
Mono-H	
90 < m(fj) < 145	Υ
2 antikt jets: pt > 20 eta < 2.5 dR (fat jet) < 1.0	Υ
2 antikt subjets: b-tag MV1 > 0.971966	Υ