Work Status

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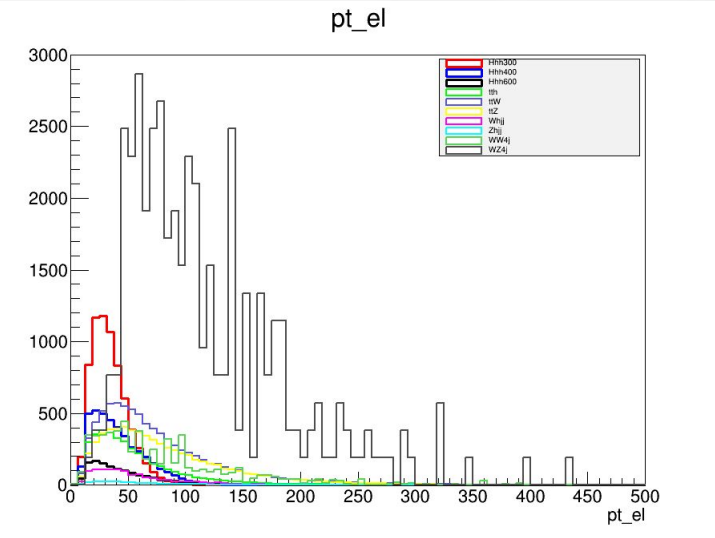
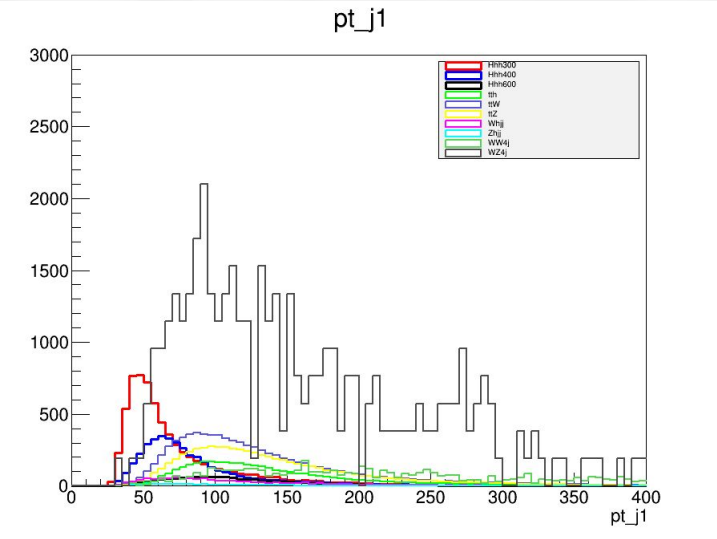
1st Jan, 2016

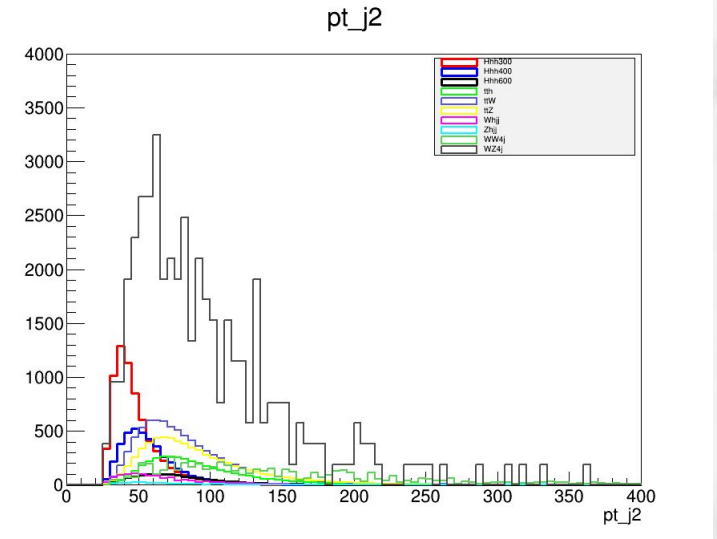
samples

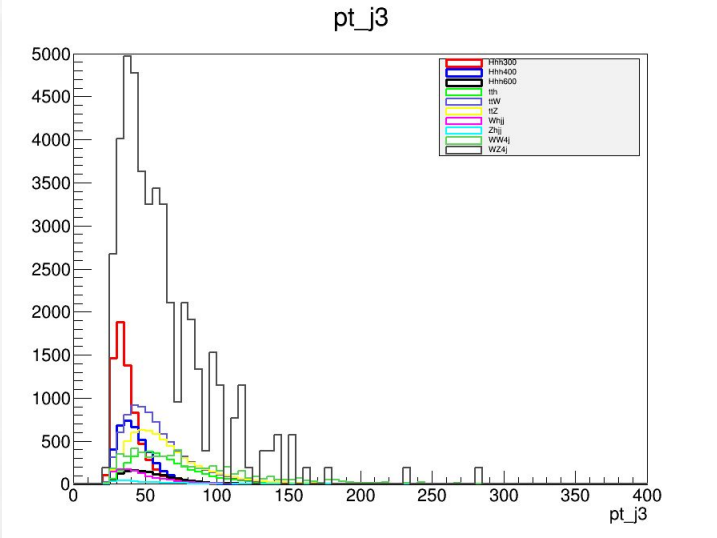
- Struggling with X+4j samples production
- Define j = g c c~, l = e
  - WZ4j ~ 1k
  - ZZ4j ongoing
- Added H400 and H600

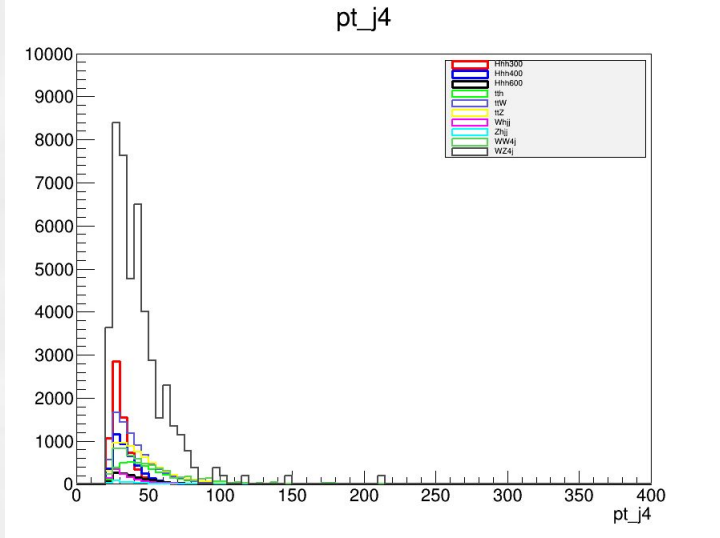
Kinematics

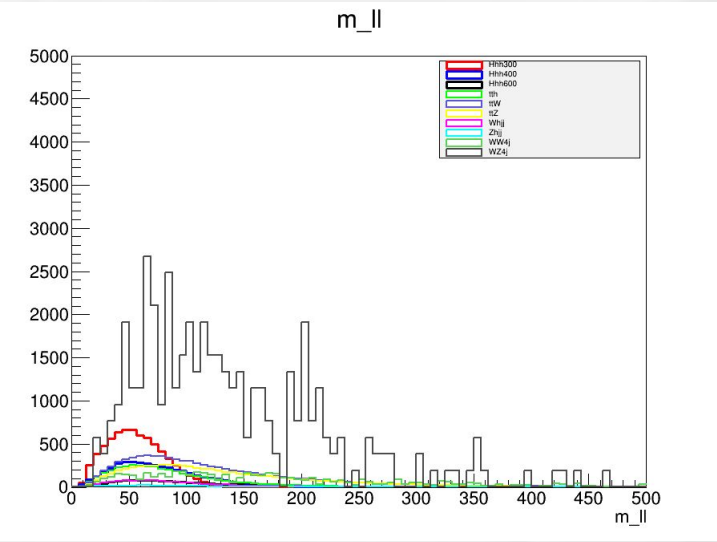

pt_el
Hhh300
Hhh400
Hhh600
tth
ttW
ttZ
Whjj
Zhjj
WW4j
WZ4j
pt_el


pt_j1
Hhh300
Hhh400
Hhh600
tth
ttW
ttZ
Whjj
Zhjj
WW4j
WZ4j
pt_j1

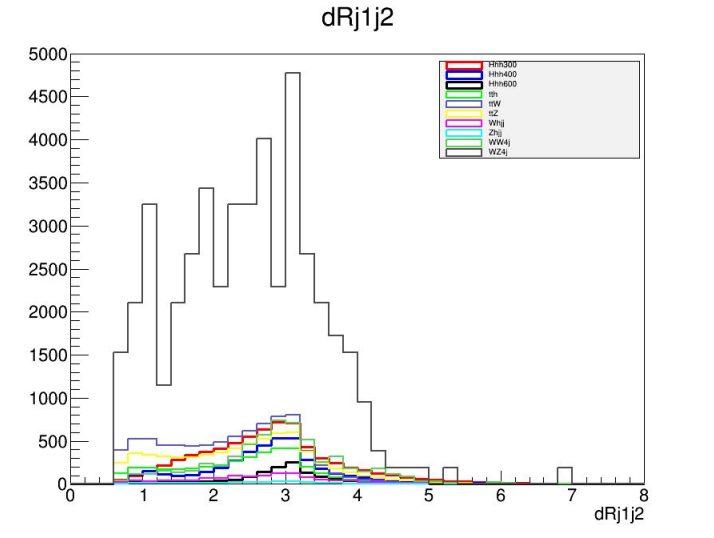

pt_j2
Hhh300
Hhh400
Hhh600
tth
ttW
ttZ
Whjj
Zhjj
WW4j
WZ4j
pt_j2

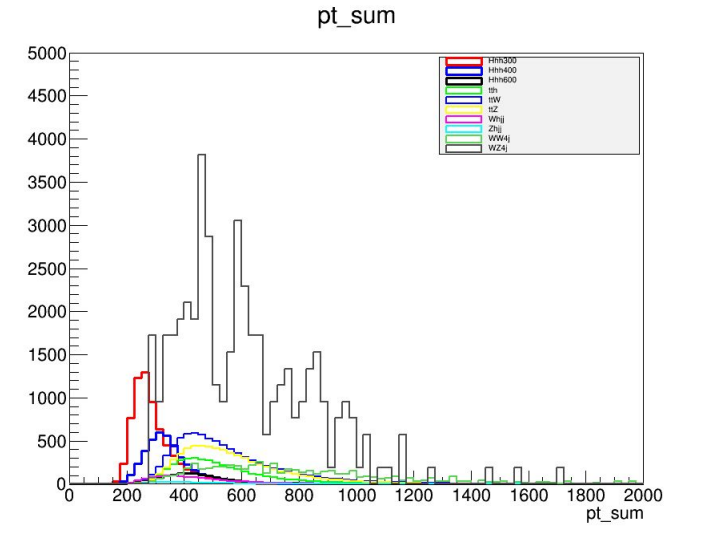

pt_j3
Hhh300
Hhh400
Hhh600
tth
ttW
ttZ
Whjj
Zhjj
WW4j
WZ4j
pt_j3

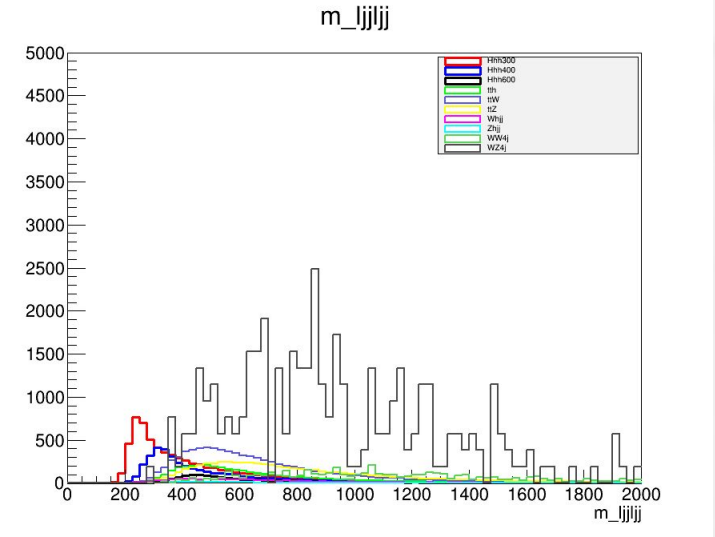

pt_j4
Hhh300
Hhh400
Hhh600
tth
ttW
ttZ
Whjj
Zhjj
WW4j
WZ4j
pt_j4


m_ll
Hhh300
Hhh400
Hhh600
tth
ttW
ttZ
Whjj
Zhjj
WW4j
WZ4j
m_ll

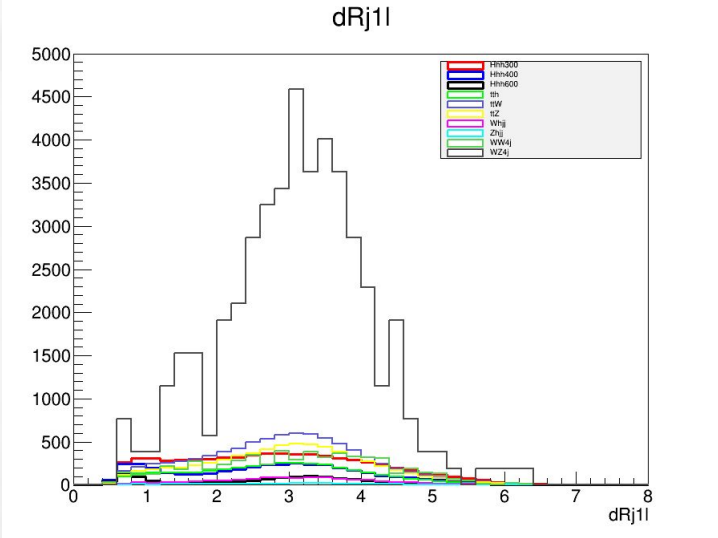
Kinematics

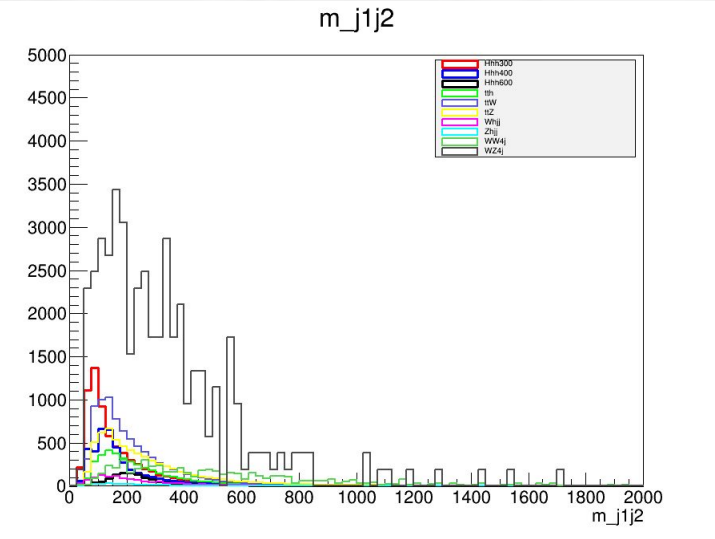


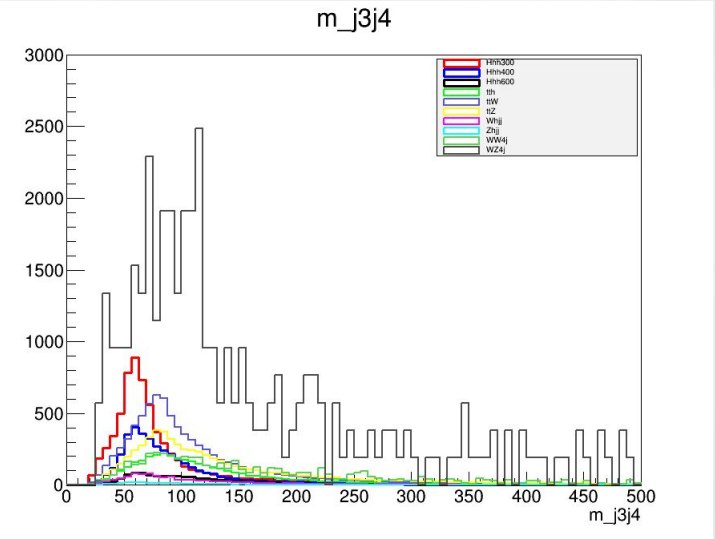




sig is more similar with bkg as mH increases







Cut-flow: Hhh300

processes	xsec(fb)	basic cuts + event selection	b-veto	pt_sum < 300GeV
Hhh300	23	17	15	10
ttW	28.4	23.8	3.2	0.08
ttZ	21.7	18.5	2.6	0.045
WW4j	19.6	15.8	14.0	0.12
tth	12.6	10.4	1.5	0.05
Whjj	3.9	2.9	2.6	0.41
Zhjj	0.89	0.67	0.59	0.11
WZ4j	155	124	105	3.8
ZZ4j	(6.3)	-	-	-
S/sqrt(B)	26 (8.10)	21 (6.5)	23 (7.2)	80 (25)
Z_0	25 (7.97)	20.7 (6.5)	22 (7.1)	64 (20)

Lumi=300 fb^{-1} (30 fb^{-1})

$$Z_0 = \sqrt{2[(S+B)\ln(\frac{S+B}{B}) - S]}$$

Hhh400

processes	xsec(fb)	basic cuts + event selection	b-veto	pt_sum < 300GeV
Hhh400	13.8	10.5	9.1	2.7
ttW	28.4	23.8	3.2	0.08
ttZ	21.7	18.5	2.6	0.045
WW4j	19.6	15.8	14.0	0.12
tth	12.6	10.4	1.5	0.05
Whjj	3.9	2.9	2.6	0.41
Zhjj	0.89	0.67	0.59	0.11
WZ4j	155	124	105	-
ZZ4j	(6.3)	-	-	-
S/sqrt(B)	15.6 (4.9)	13.0 (4.1)	13.9 (4.4)	21.8 (6.9)
Z_0	15.2 (4.8)	12.9 (4.1)	13.7 (4.3)	20.0 (6.3)

Lumi=300 fb^{-1} (30 fb^{-1})

Hhh600

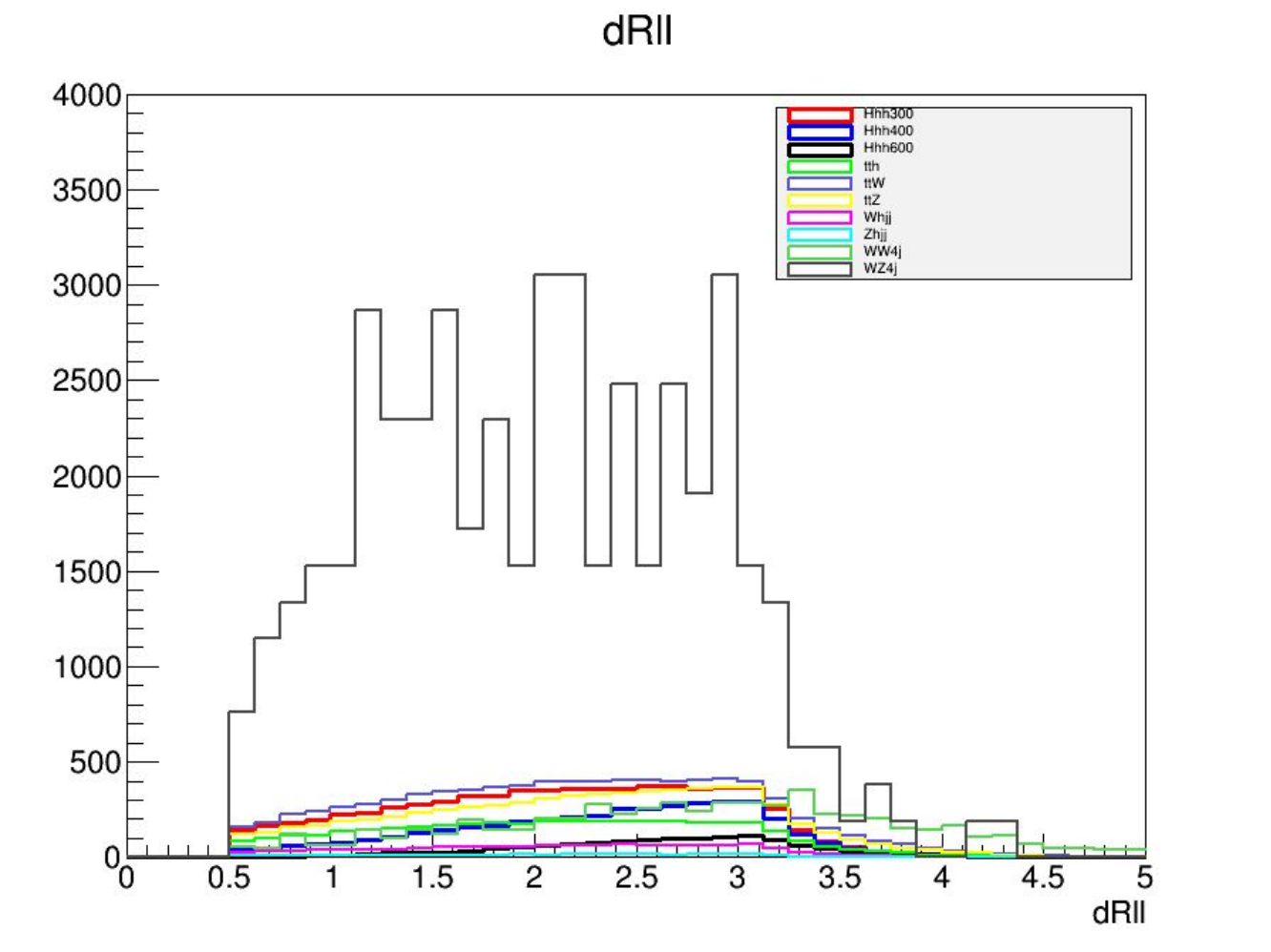
processes	xsec(fb)	basic cuts + event selection	b-veto	pt_sum < 300GeV
Hhh600	4.6	3.4	2.9	0.26
ttW	28.4	23.8	3.2	0.08
ttZ	21.7	18.5	2.6	0.045
WW4j	19.6	15.8	14.0	0.12
tth	12.6	10.4	1.5	0.05
Whjj	3.9	2.9	2.6	0.41
Zhjj	0.89	0.67	0.59	0.11
WZ4j	155	124	105	-
ZZ4j	(6.3)	-	-	-
S/sqrt(B)	5.1 (1.6)	4.2 (1.3)	4.4 (1.4)	5.0 (1.6)
Z_0	5.1 (1.6)	4.2 (1.3)	4.3 (1.4)	4.8 (1.5)

Lumi=300 fb^{-1} (30 fb^{-1})

Summary & to do

- Hhh400, Hhh600 is much harder to distinguish from bkg, need further optimizations
- X+4j samples...

Backup


dRll
4000
3500
3000
2500
2000
1500
1000
500
0
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
dRll
Hhh300
Hhh400
Hhh600
tth
ttW
ttZ
Whjj
Zhjj
WW4j
WZ4j