

tth study @ $\sqrt{s} = 500$ GeV

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Remainder

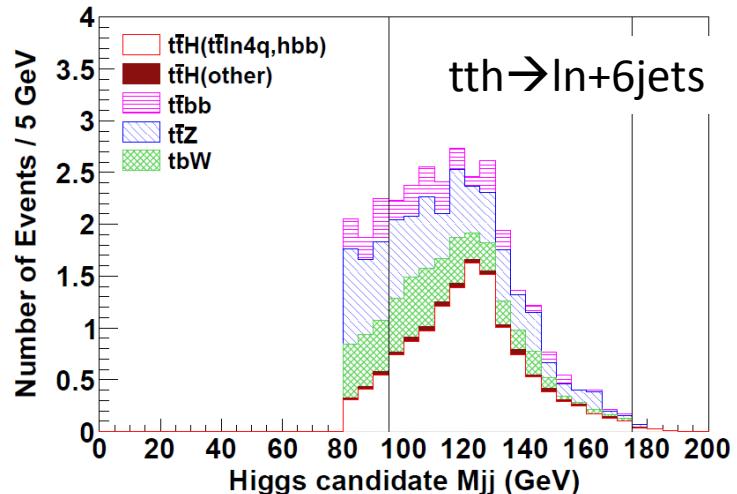
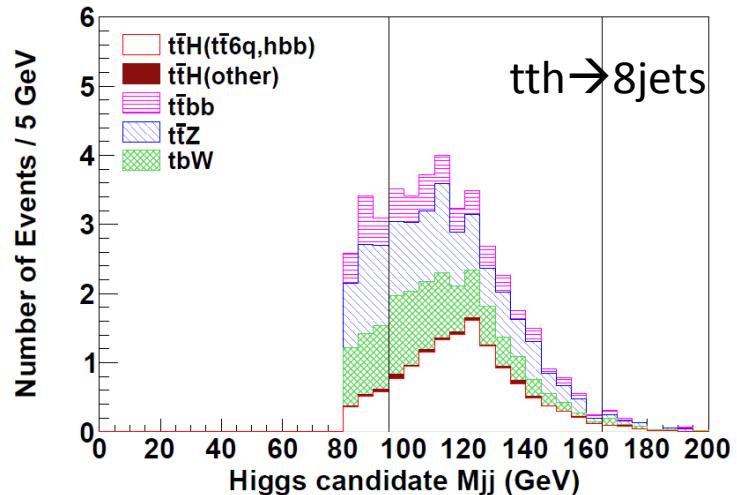
- signal: $t\bar{t}h \rightarrow 8 \text{ jets } (h \rightarrow bb)$
 $t\bar{t}h \rightarrow l\nu + 6 \text{ jets } (h \rightarrow bb)$
- background: $t\bar{t}Z$, $t\bar{t}g(g \rightarrow bb)$, $t\bar{b}W$
- $M_h = 125 \text{ GeV}$
- $\sqrt{s} = 500 \text{ GeV}, L = 500 \text{ fb}^{-1}$

before applying kt clustering

- $t\bar{t}h \rightarrow 8 \text{ jets } S/\sqrt{S + B} = 2.04$
- $t\bar{t}h \rightarrow l\nu + 6 \text{ jets } S/\sqrt{S + B} = 2.42$

update

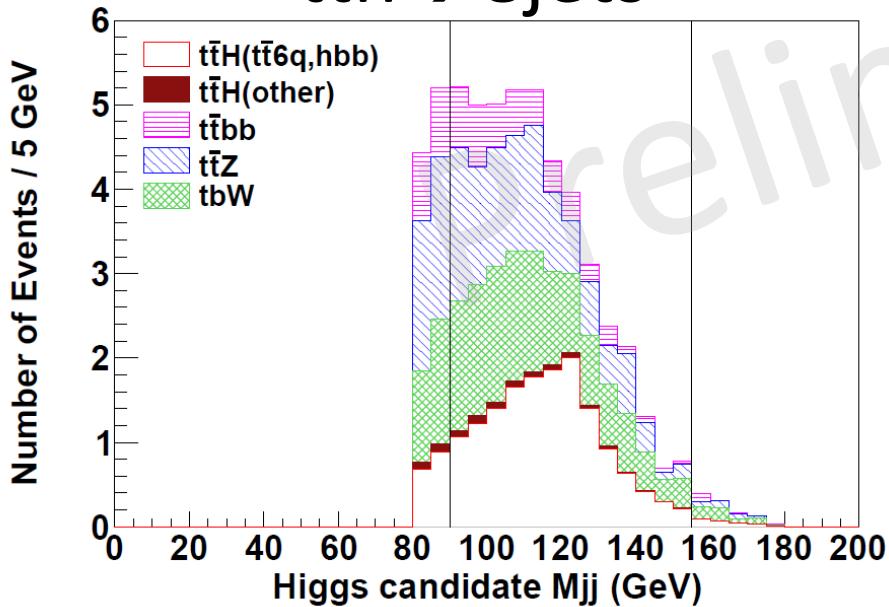
- apply Kt clustering to remove low Pt background



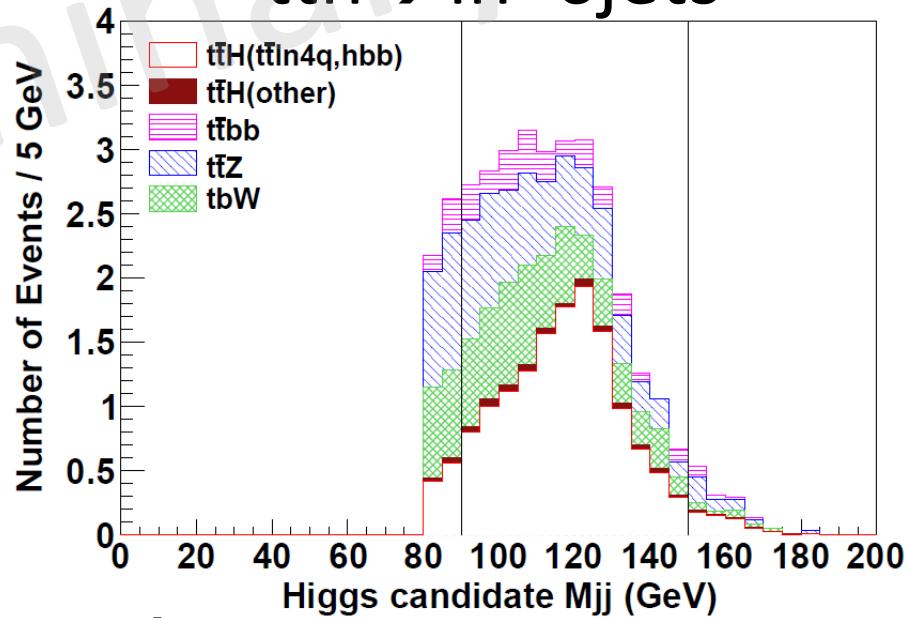
Reconstructed Mass, Significance

✓ with Kt clustering
(tbw shape is same as previous analysis.)

tth → 8 jets



tth → ln+6 jets



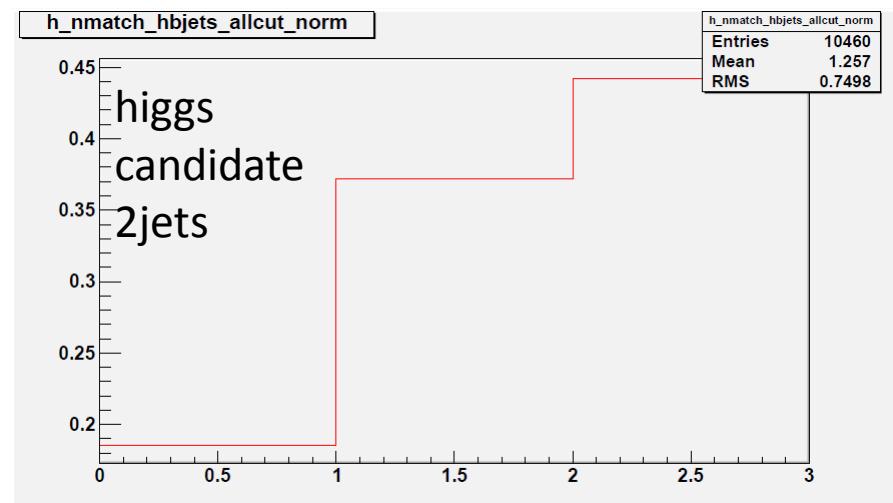
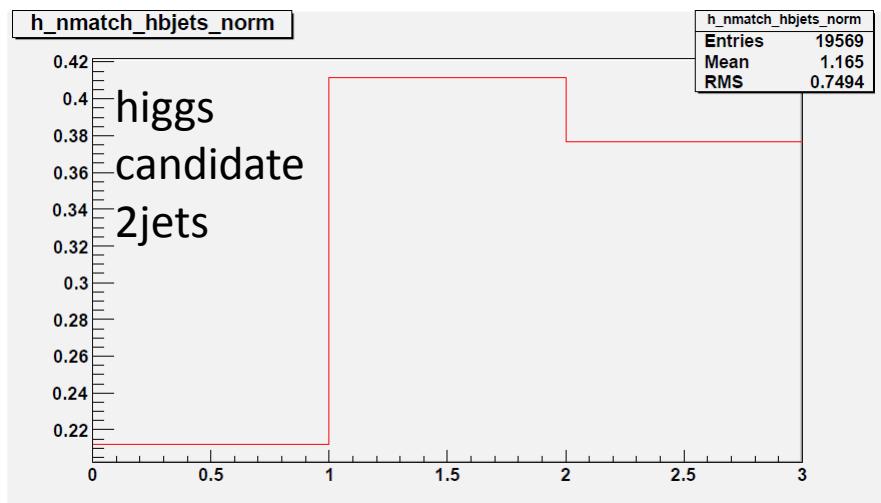
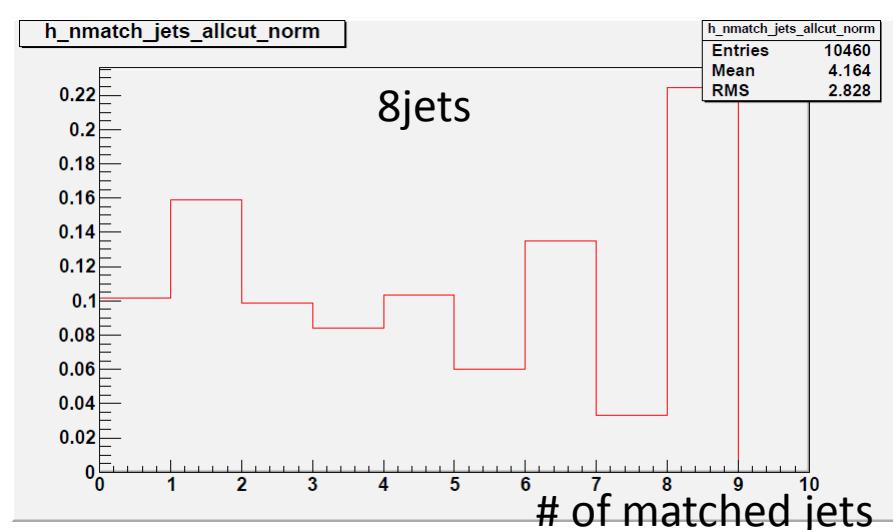
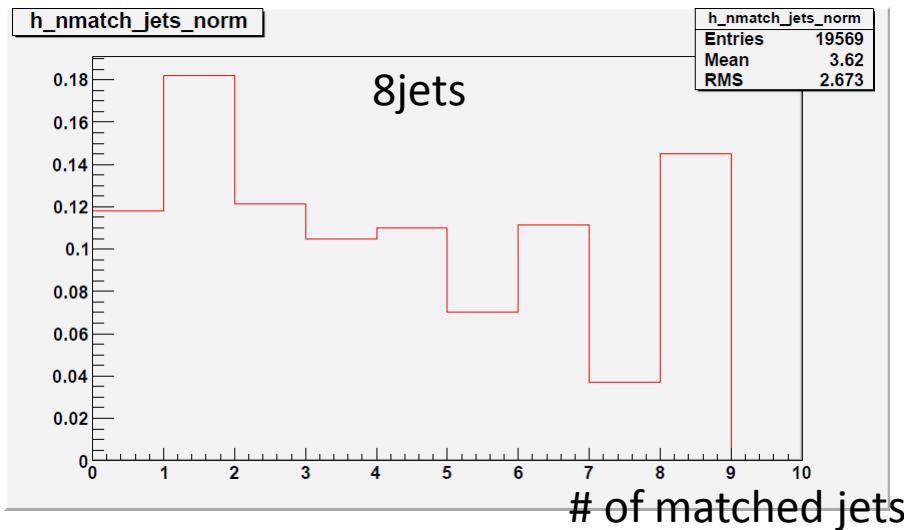
- $\sqrt{s} = 500 \text{ GeV}, 500 \text{ fb}^{-1}$
- Cut base + counting analysis
- $N_{\text{sig}}/\sqrt{N_{\text{sig}} + N_{\text{bkgd}}} = 2.23$,
- $|\Delta g_t/g_t| \sim 22\%$

- $\sqrt{s} = 500 \text{ GeV}, 500 \text{ fb}^{-1}$
- Cut base + counting analysis
- $N_{\text{sig}}/\sqrt{N_{\text{sig}} + N_{\text{bkgd}}} = 2.53$,
- $|\Delta g_t/g_t| \sim 20\%$

Jet matching ($t\bar{t}\rightarrow 8\text{jets}$)

checked how many reconstructed jets are matched with MC

just after making jet pair
(4 b jets are required)



- found no tau(vtau) from W decay
→ overestimate the significance of ln+6jets channel

to do

- solve the tau issue
- generate MC samples with tau

Backup

signal acceptance ($t\bar{t} \rightarrow 8\text{jet}$)

* Cut parameters are optimized for each analysis

with Kt clustering

Acceptance table (%)

requirement	Number of Events
noCut	100
nolsoLep	92.5
8jetReq	87.2
4bjetReq	49.56
absCosThetaLT0.99	48.8
chi2 cut	39.0
hcandMjj>80	34.9
jet01EnergySum	28.0
jet567EnergySum	28.0
Mtop>140	26.1

without Kt clustering (result at AWLC)

Acceptance table (%)

requirement	Number of Events
noCut	100
nolsoLep	92.4
8jetReq	82.5
4bjetReq	47.9
absCosThetaLT0.99	38.0
chi2 cut	26.9
hcandMjj>80	25.0
jet01EnergySum	23.5
jet567EnergySum	21.1
Mtop>140	20.7

- signal acceptance is increased ~5.4% .
(before selection of M_h range)