

Top pair production at threshold

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@Weekly meeting

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Event selection@4j

Assuming 10fb^{-1} per E_{cm}

E_{cm}	346.4 ~ 339.4 GeV (evry 1 GeV)
polarization	$(e^-, e^+) = (+0.8, -0.3)$
top mass	173.2 GeV

Decay modes of $t\bar{t}$

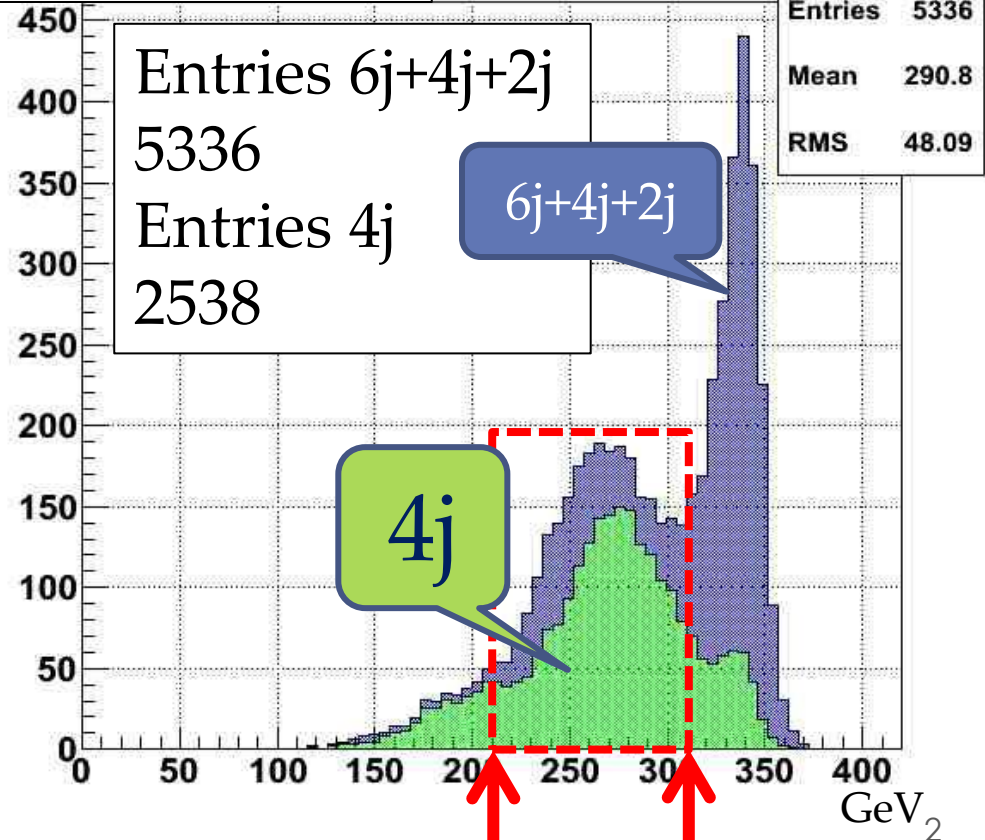
$t\bar{t}$ \Rightarrow 6j, 4jlv, 2jlvlv
 \Rightarrow cut by visible energy
 $220 < e_{\text{vis}} < 310 (346.4 \text{ GeV})$

background

$e^+e^- \Rightarrow WW$
 \Rightarrow mass, momentum,
flavor-tag, Event shape

Not yet

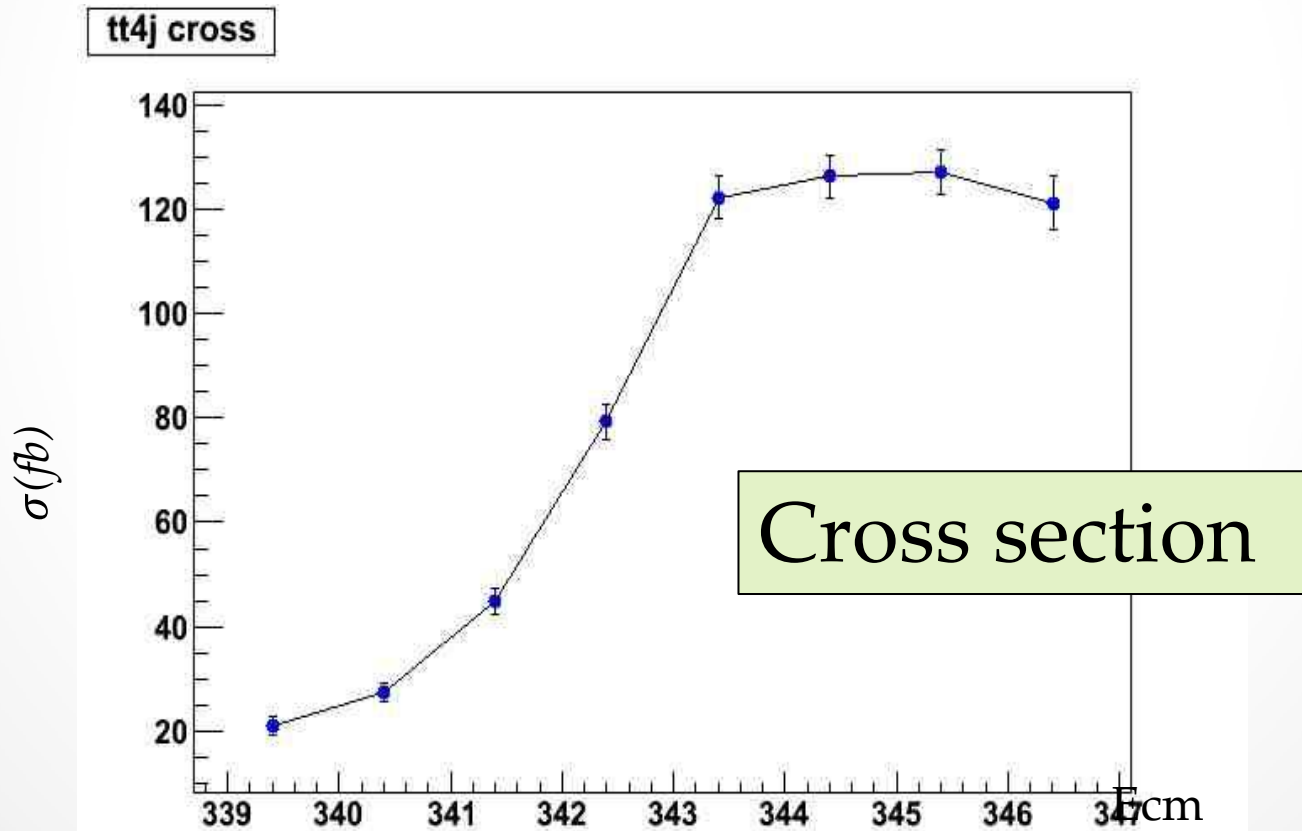
Visible Energy



top cross section

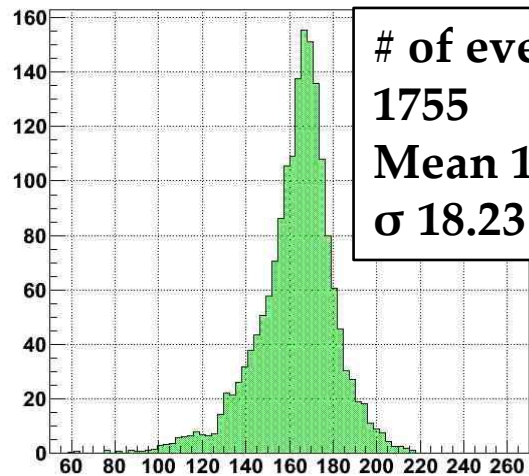
$$\sigma = \frac{N_{obs1}}{\epsilon L}, \quad \epsilon = \frac{N_{obs2}}{N_{truth2}}$$

σ : cross section, ϵ : efficiency, N_{truth} : events which I made using MC,
 N_{obs} : events of event selection , L : luminosity



top mass @4jets

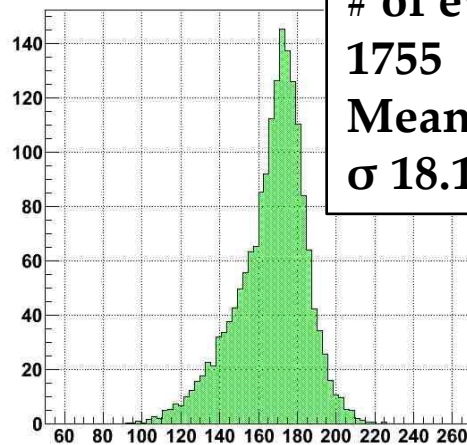
topmass1_tt4jEcm346.4



of events
1755
Mean 162.9
 σ 18.23

GeV

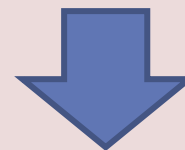
topmass2_tt4jEcm346.4



of events
1755
Mean 166.9
 σ 18.11

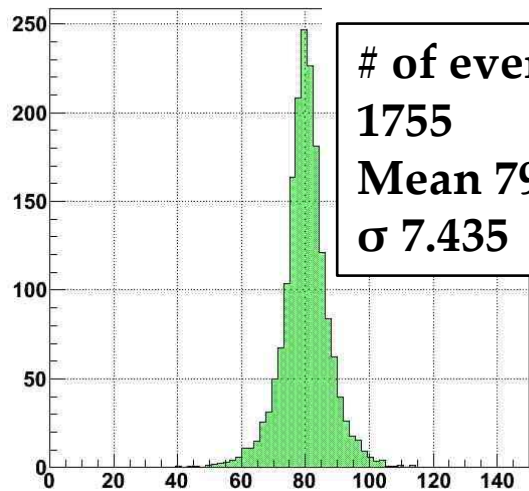
GeV

Peaks appear near 173 GeV . But not precious



Background study should be finished

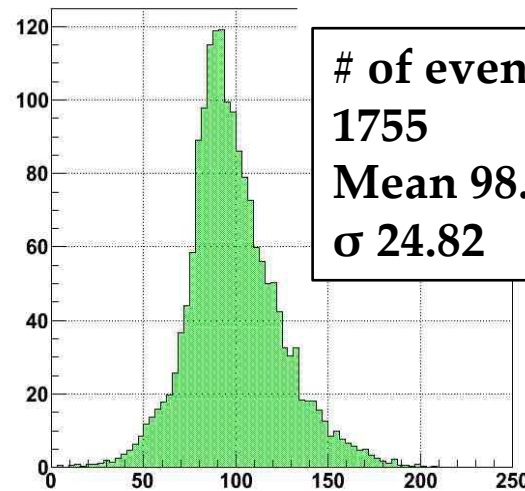
Wmass1_tt4jEcm346.4



of events
1755
Mean 79.99
 σ 7.435

GeV

Wmass2_tt4jEcm346.4



of events
1755
Mean 98.79
 σ 24.82

GeV

@hadron Wmass can be reconstructed

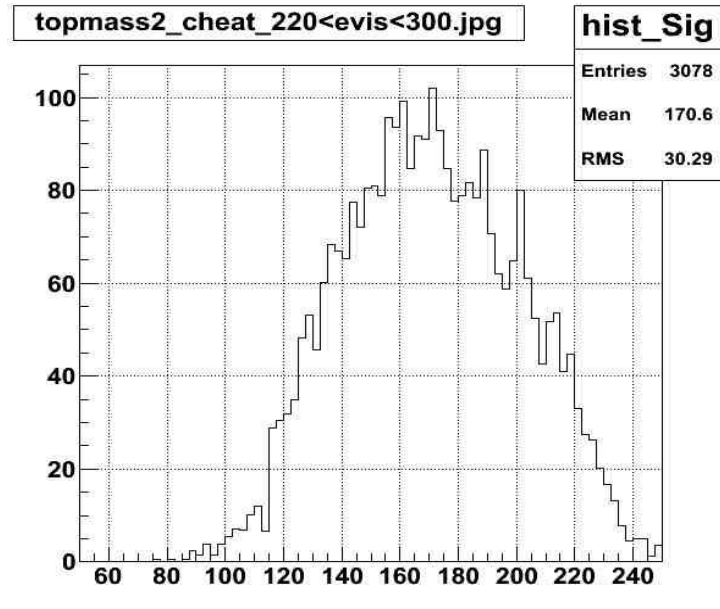
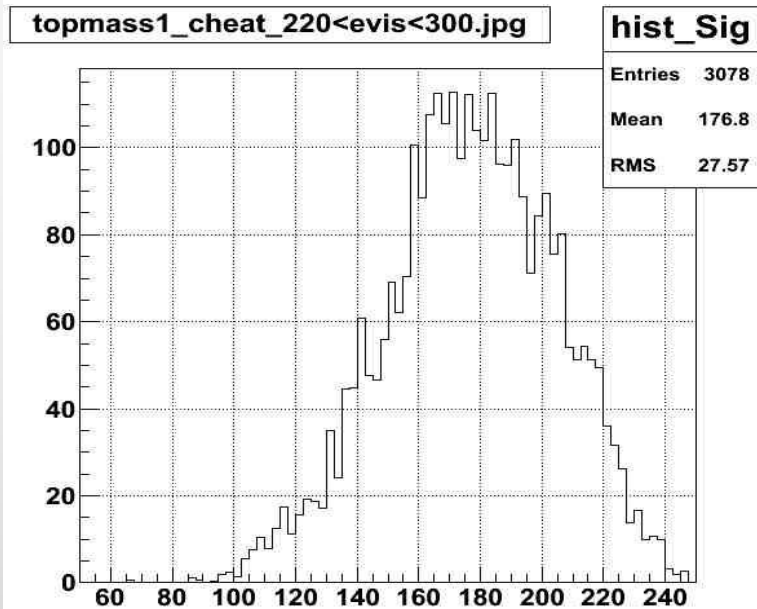
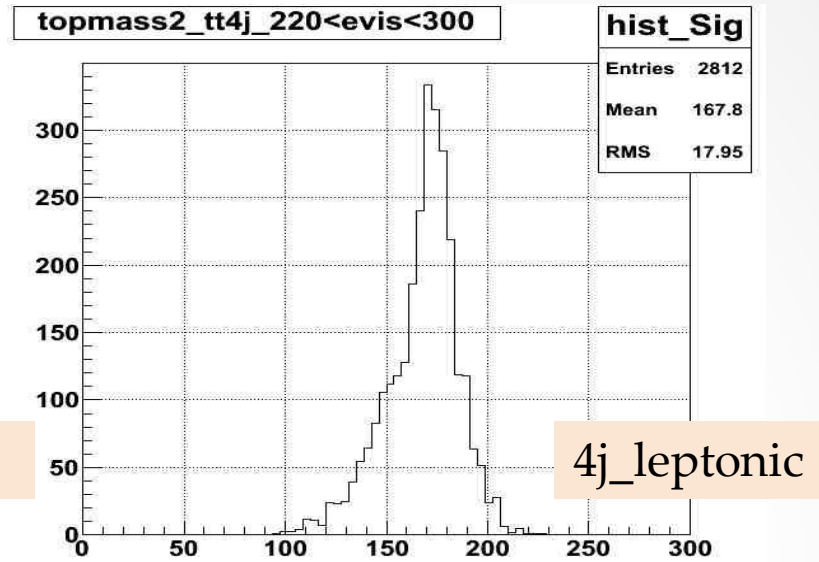
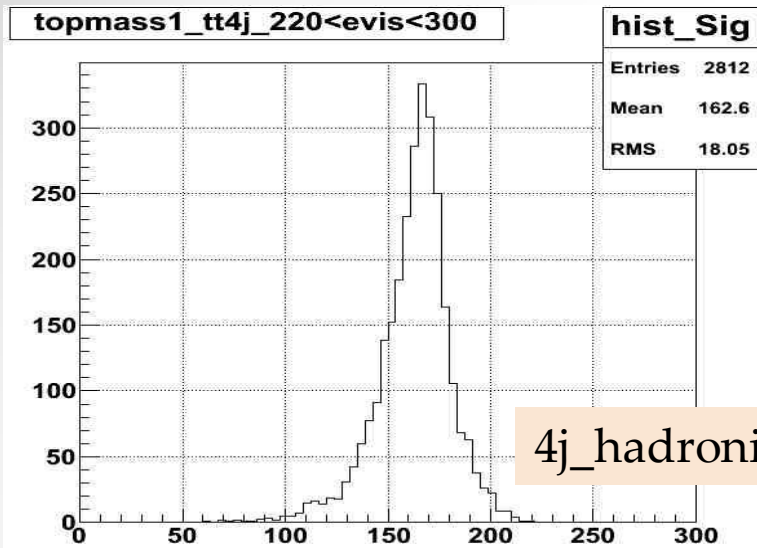


Improve the precision of b-tagging

● Hadronic decay

● Leptonic decay

Top mass @tt4j_cheat



Status/plan

- Stdhep files (generator information) which I used are not good .
⇒ Now : new generator (physsim).
- Making ttbar DSTsample@350GeV
- Plan : $\chi^2 \Rightarrow$ whizard
efficiency ,cross section \Rightarrow physsim