

CHARGED HIGGS SEARCH IN WH

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status and plan

Charged Higgs search

► Master thesis

- We had a meeting about my study and thesis.

→ Only 3j analysis will be written in my thesis.

→ After I finished to write it, we'll start 6j analysis again.

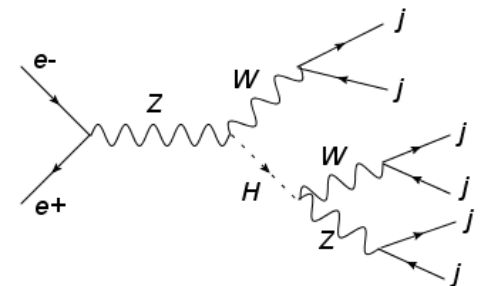
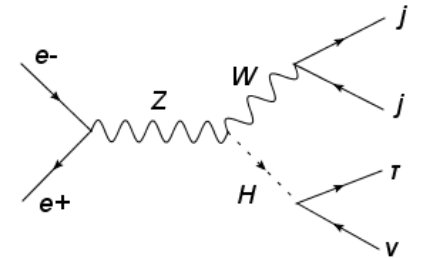
► H to taunu channel (3j analysis)

- WWZ BG

- upper limit of $\sigma \cdot BR$

► H to WZ channel (6j analysis) ()

- true matching



3j analysis with $H \rightarrow WZ$ ch.

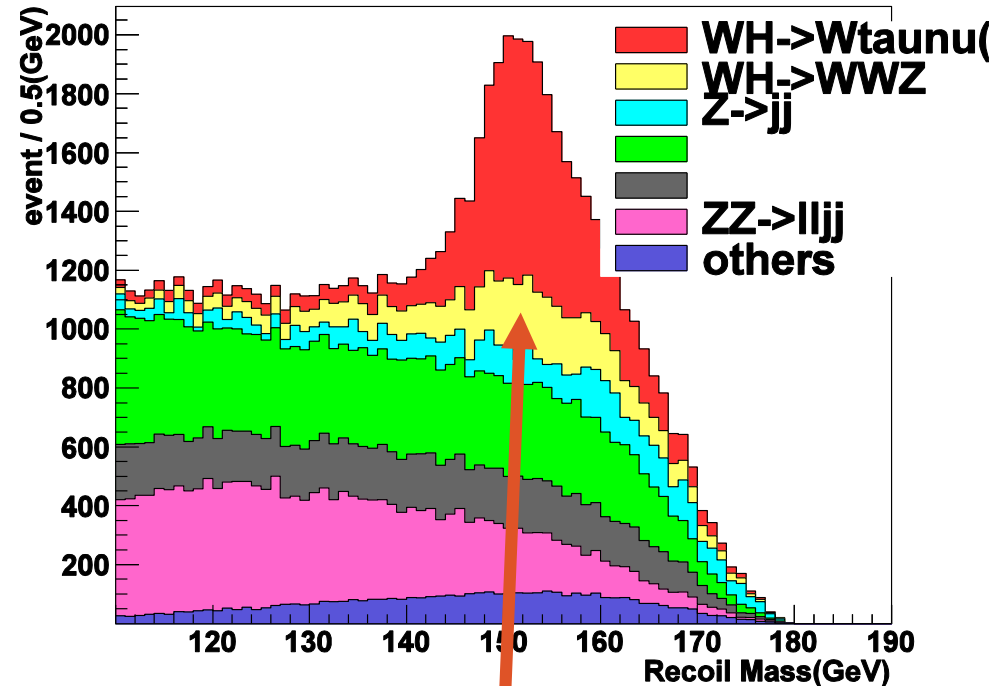
signal definition

$70 < M_w < 90$ (GeV)
 $140 < M_{rec} < 160$ (GeV)
 $15 < P_t$ (GeV)
 $170 < E_{vis}$ (GeV)
 $0.95 < |\cos(\text{w production angle})|$

- ▶ **signal efficiency = 35.8 %**
(26803 event \rightarrow 9590 event)
- ▶ **efficiency of WZ ~ 6 %**
(53613 event \rightarrow 3588 event)

- ▶ significance = 53.8%

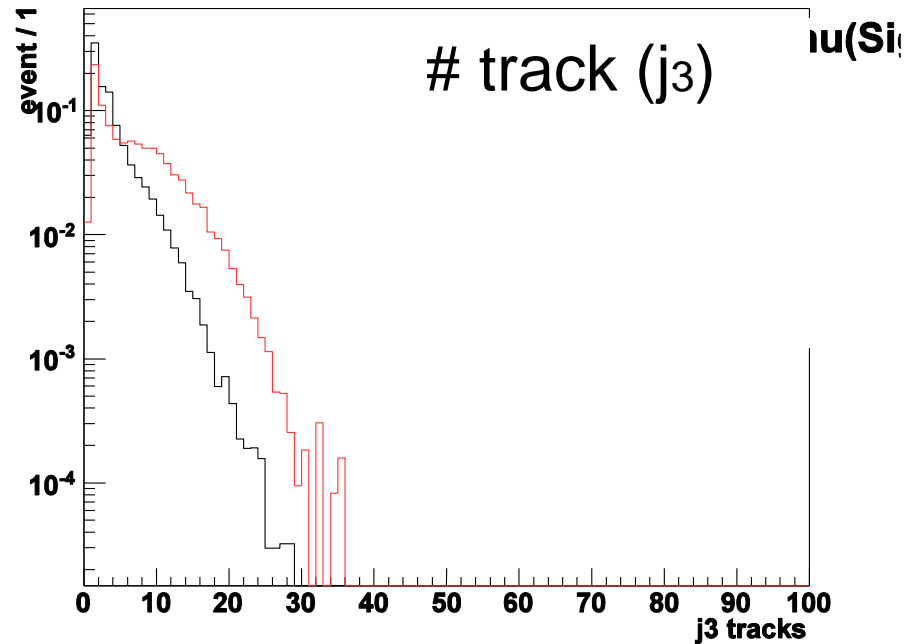
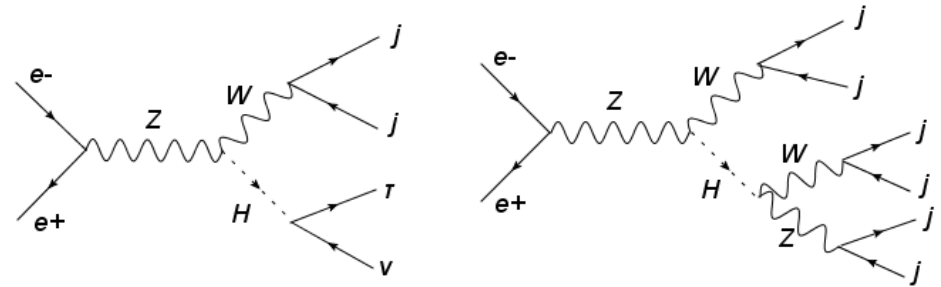
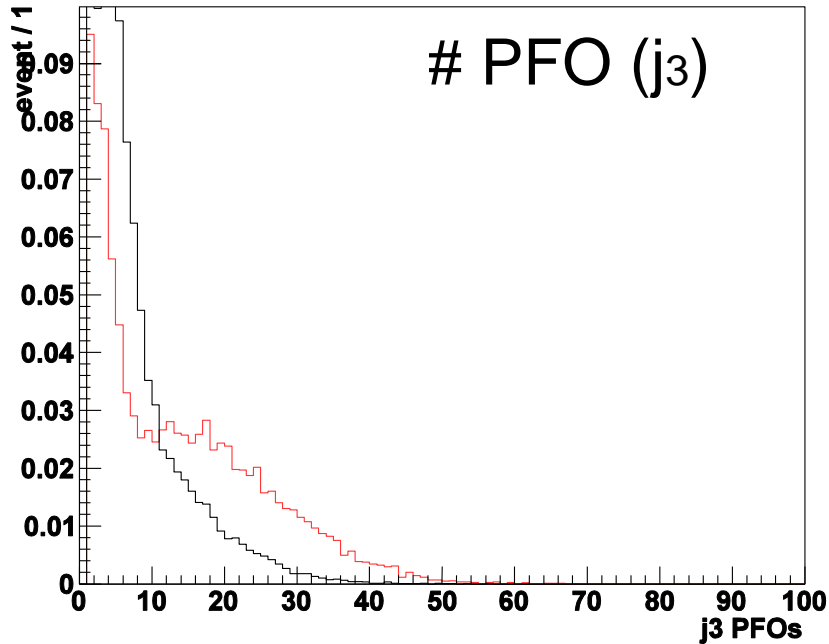
※not consider about BR of Higgs
※ $BR(H \rightarrow \text{taunu}) \ll BR(H \rightarrow WZ)$
 \rightarrow we should cut WWZ event.



I selected all event(not only 6j event) in this analysis.
WWZ can decay leptons, so there are lepton events.

back up

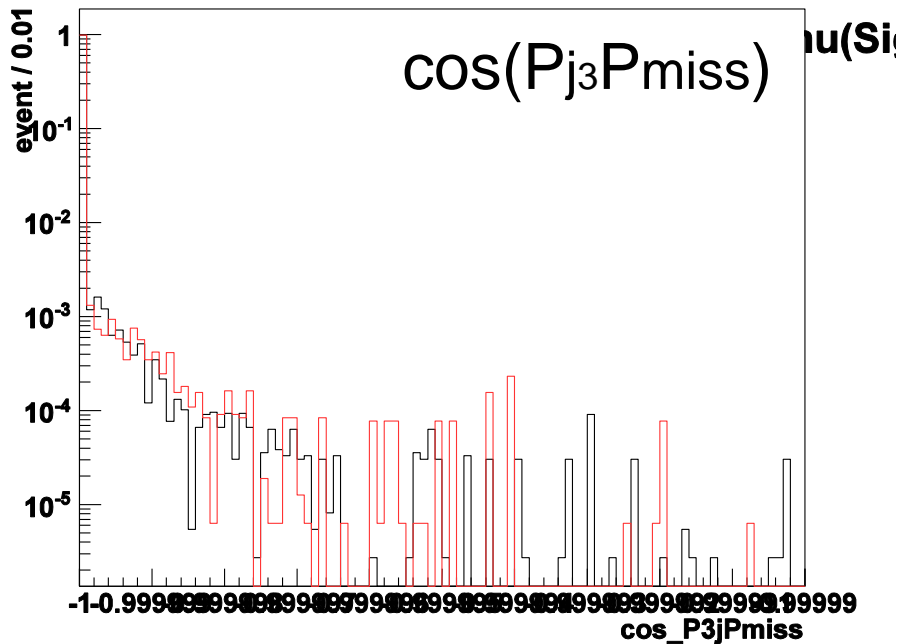
tau jet (j3) #PFO and #track



cut value

- 70 < Mw < 90 (GeV)
- 110 < Mrec < 190 (GeV)
- 15 < Pt (GeV)
- 170 < Evis (GeV)
- 0.95 < |cos(w production angle)|

angle between tau jet and missing momentum @higgs rest frame



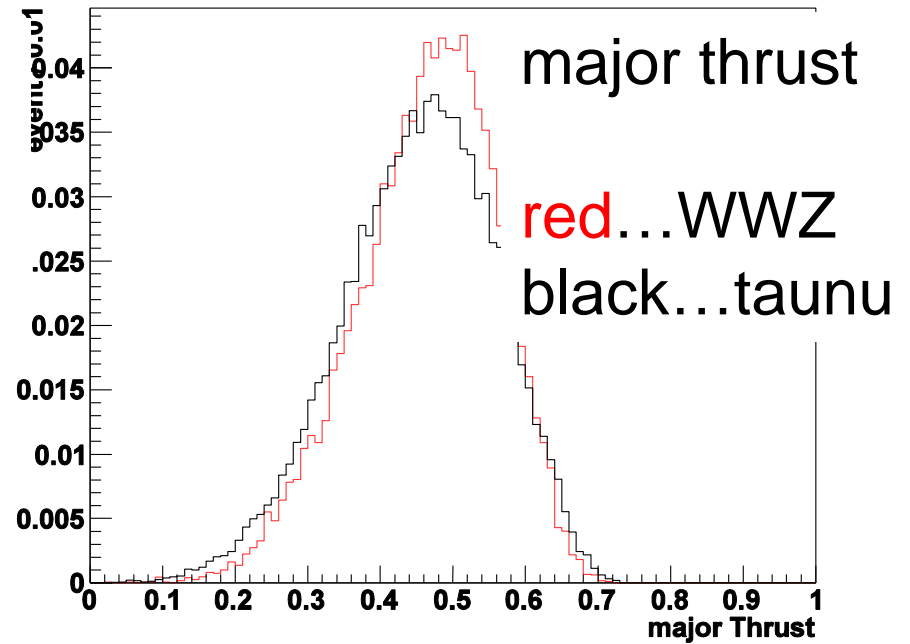
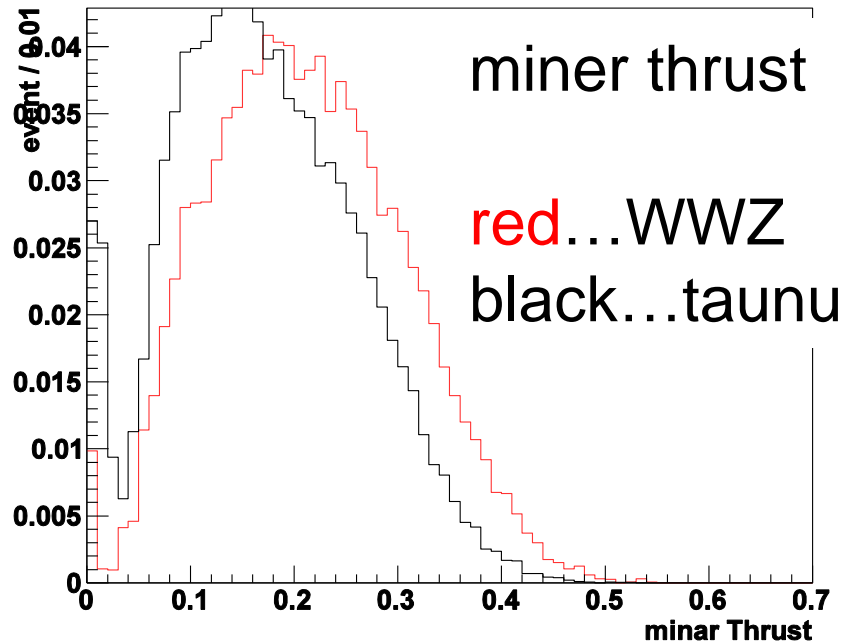
$\cos(P_{j3}P_{miss})$

1. tauの運動量とmissing 運動量をもってくる
2. Higgsの静止系にBoost
3. \cos_theta の計算

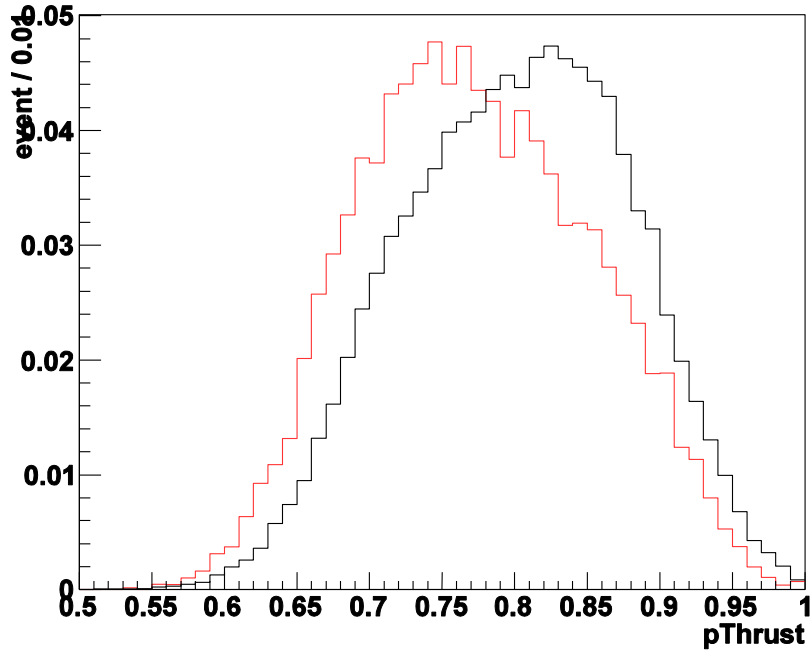
cut value

- $70 < M_w < 90$ (GeV)
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- $0.95 < |\cos(w \text{ production angle})|$

event shape(thrust)

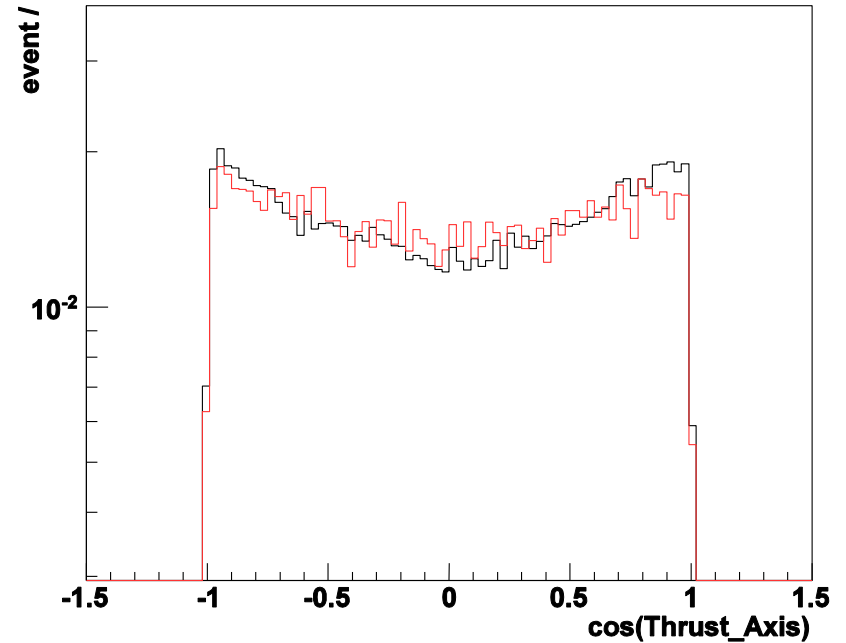


event shape(thrust)



pthrust

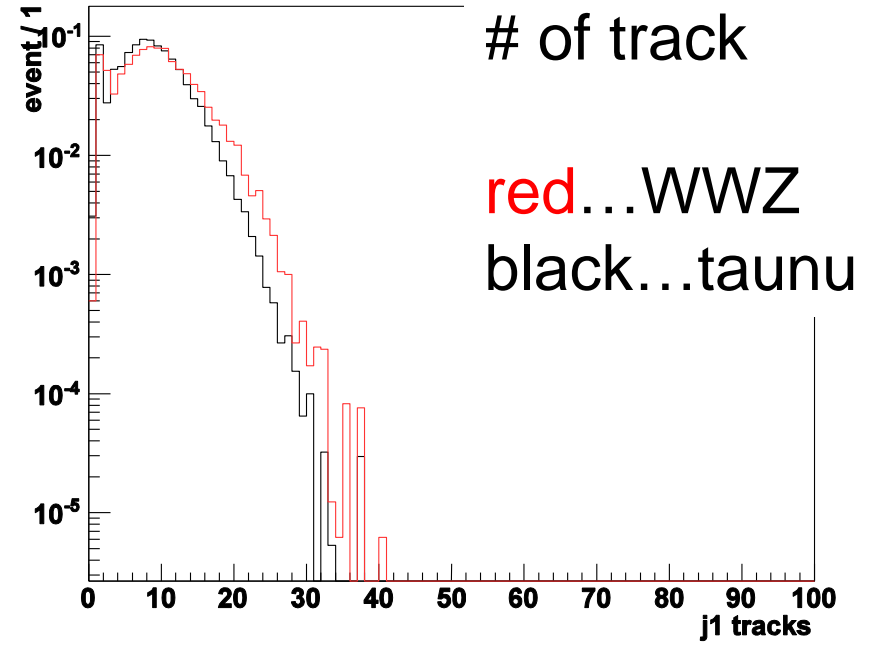
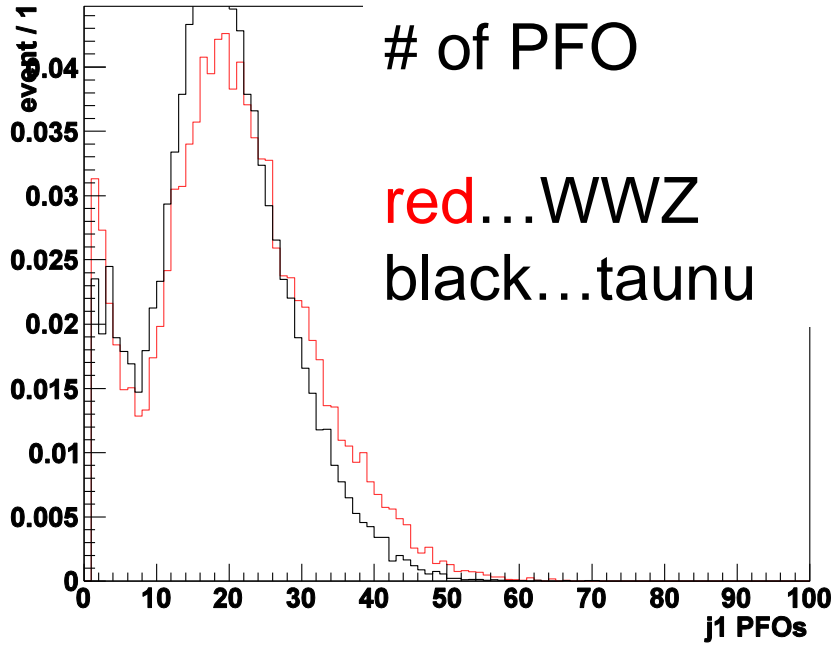
red...WWZ
black...taunu



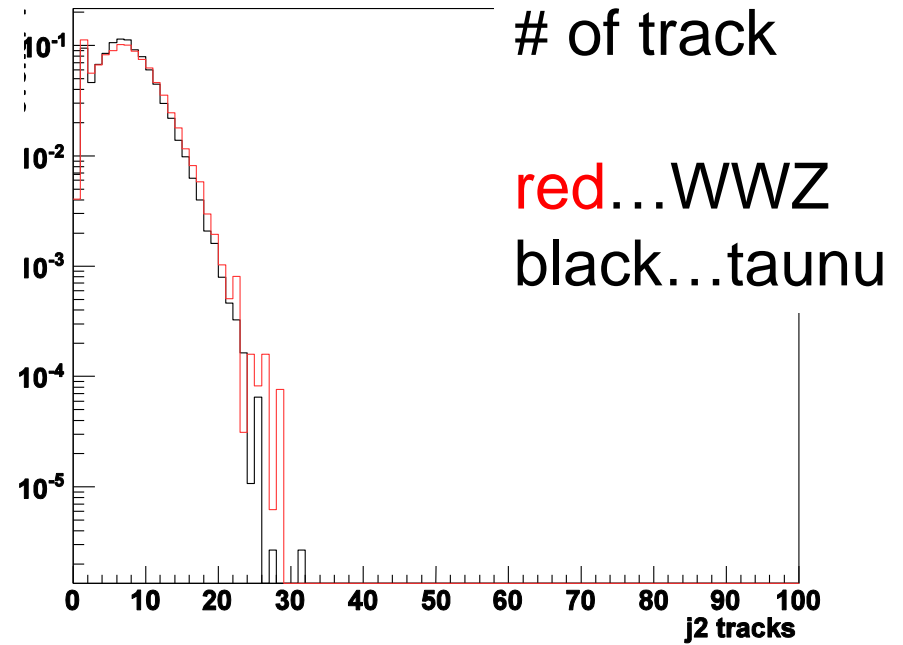
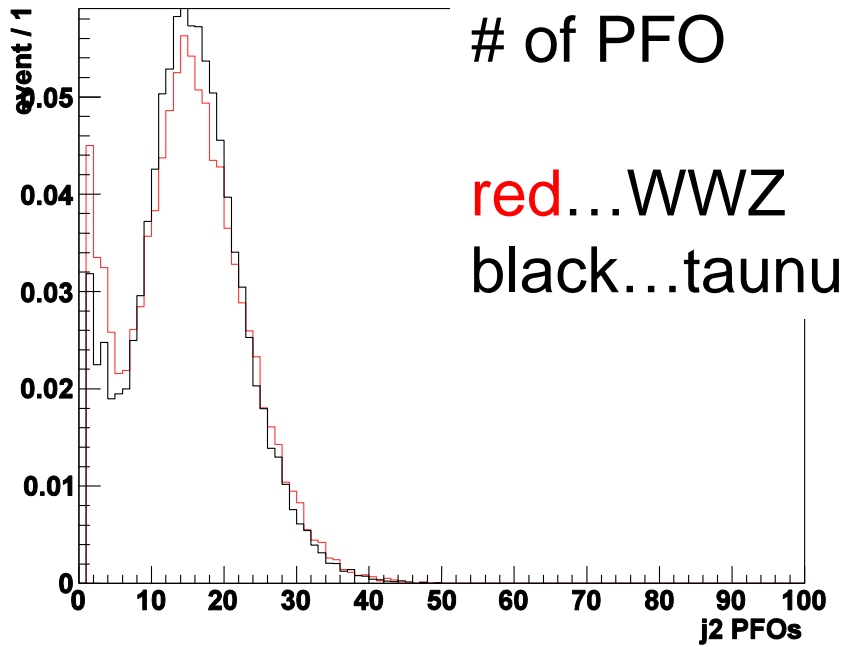
thrust axis

red...WWZ
black...taunu

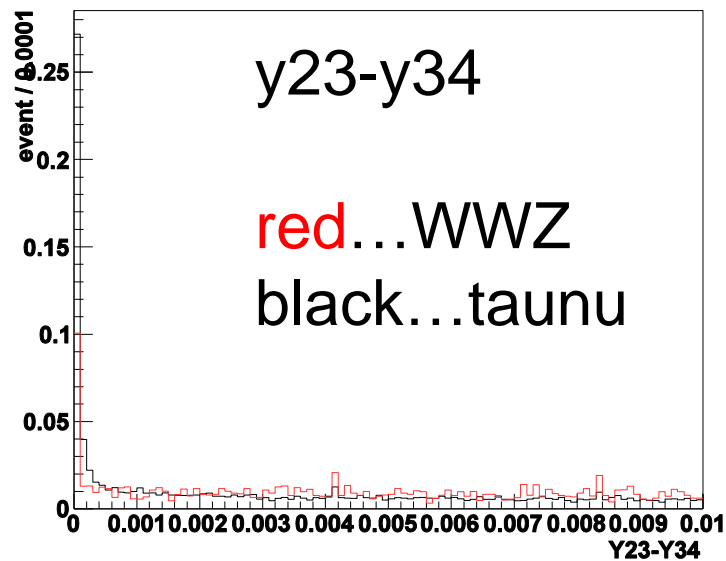
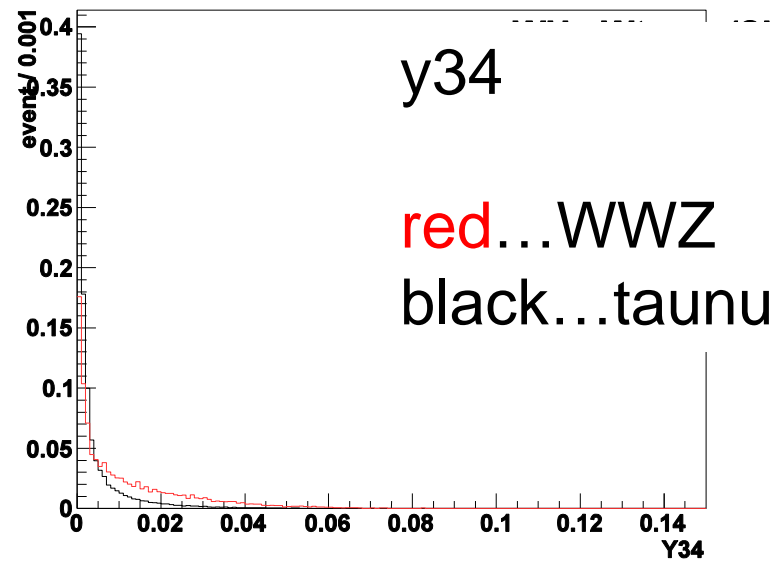
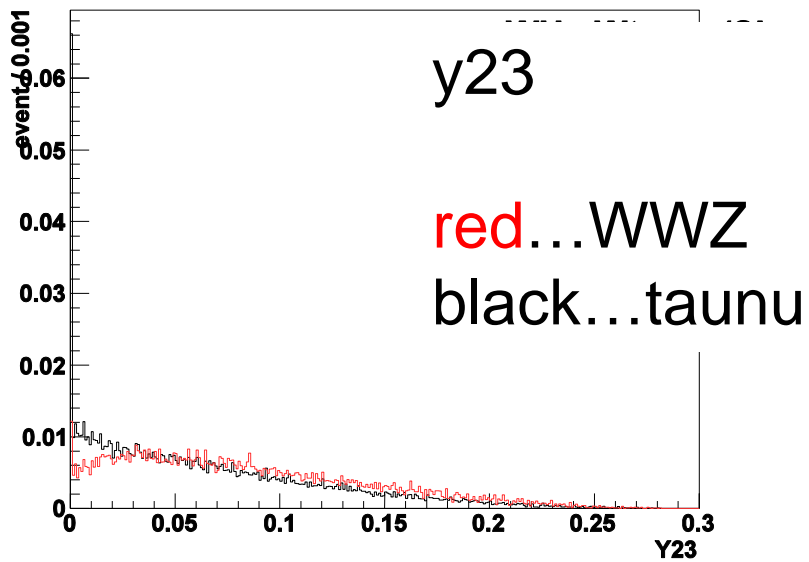
j1



j2



y23,y34



y56,y67

