

Comparison with  $\tau$  trigger &  $\mu$  or  $\tau$  trigger

$W_R$  1000 GeV-6500 GeV &  $N$  100 GeV ~

# Signal Efficiency $\tau$ trigger vs $\mu$ or $\tau$ trigger

- Comparing using **only  $\tau$  trigger** and using **both  $\tau$  trigger  $\mu$  trigger**
- > Using Both two trigger would select more datas, But efficiency would also be better?

1. MET filter + Tau trigger	
2. Tau ID	<ul style="list-style-type: none"><li>- j_decaymode = 0 , 1, 10 , 11</li><li>- DecayModeNewDM</li><li>- delta z&lt; 0.2</li><li>- passTIDvJet , passTIDvMu , passTIDvEl</li><li>- eta &lt; 2.1</li></ul>
3. Pt cut	<ul style="list-style-type: none"><li>- Pt&gt; 190 GeV</li></ul>

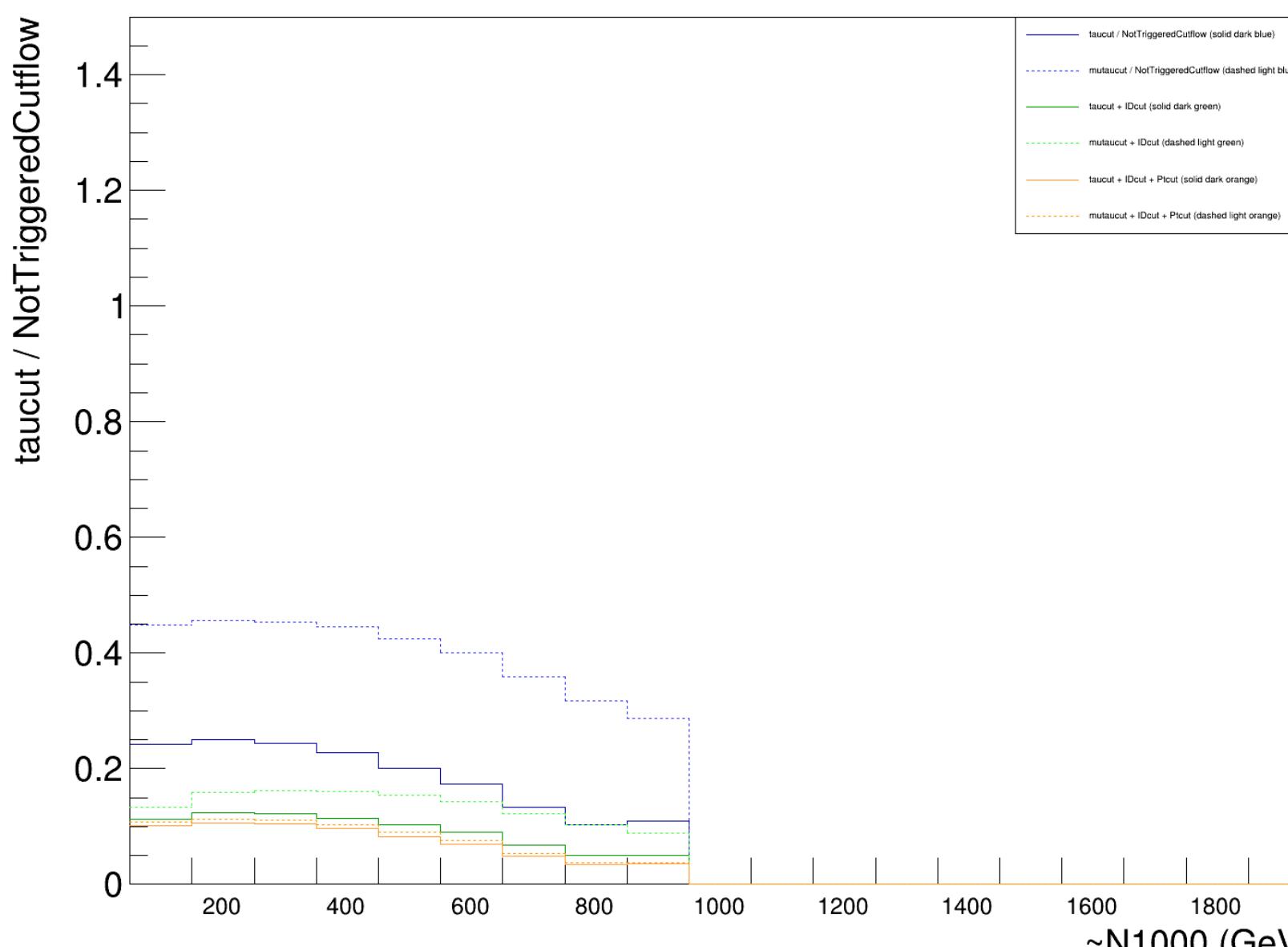
1. MET filter + (Tau trigger + Muon trigger)	
2. Tau ID	<ul style="list-style-type: none"><li>- j_decaymode = 0 , 1, 10 , 11</li><li>- DecayModeNewDM</li><li>- delta z&lt; 0.2</li><li>- passTIDvJet , passTIDvMu , passTIDvEl</li><li>- eta &lt; 2.1</li></ul>
3. Pt cut	<ul style="list-style-type: none"><li>- Pt&gt; 190 GeV</li></ul>

# $\mu$ or $\tau$ trigger & $\tau$ trigger

$(P_T + \tau^{\text{ID}} + \tau \text{ trigger} + \text{MET filter}) / \text{MET filter}$

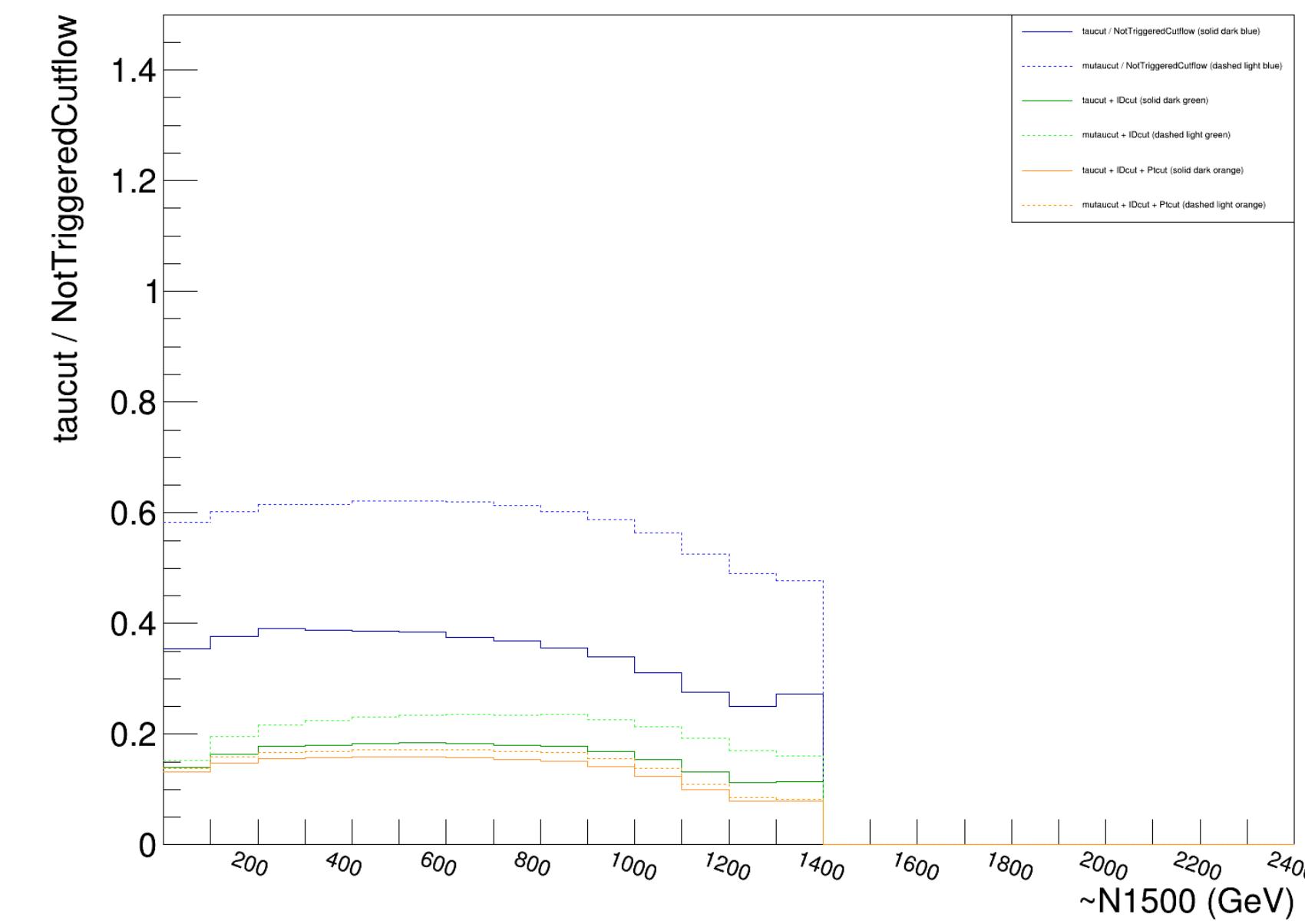
$(P_T + \tau^{\text{ID}} + \tau \text{ trigger or } \mu \text{ trigger} + \text{MET filter}) / \text{MET filter}$

Ratio of taucut to NotTriggeredCutflow



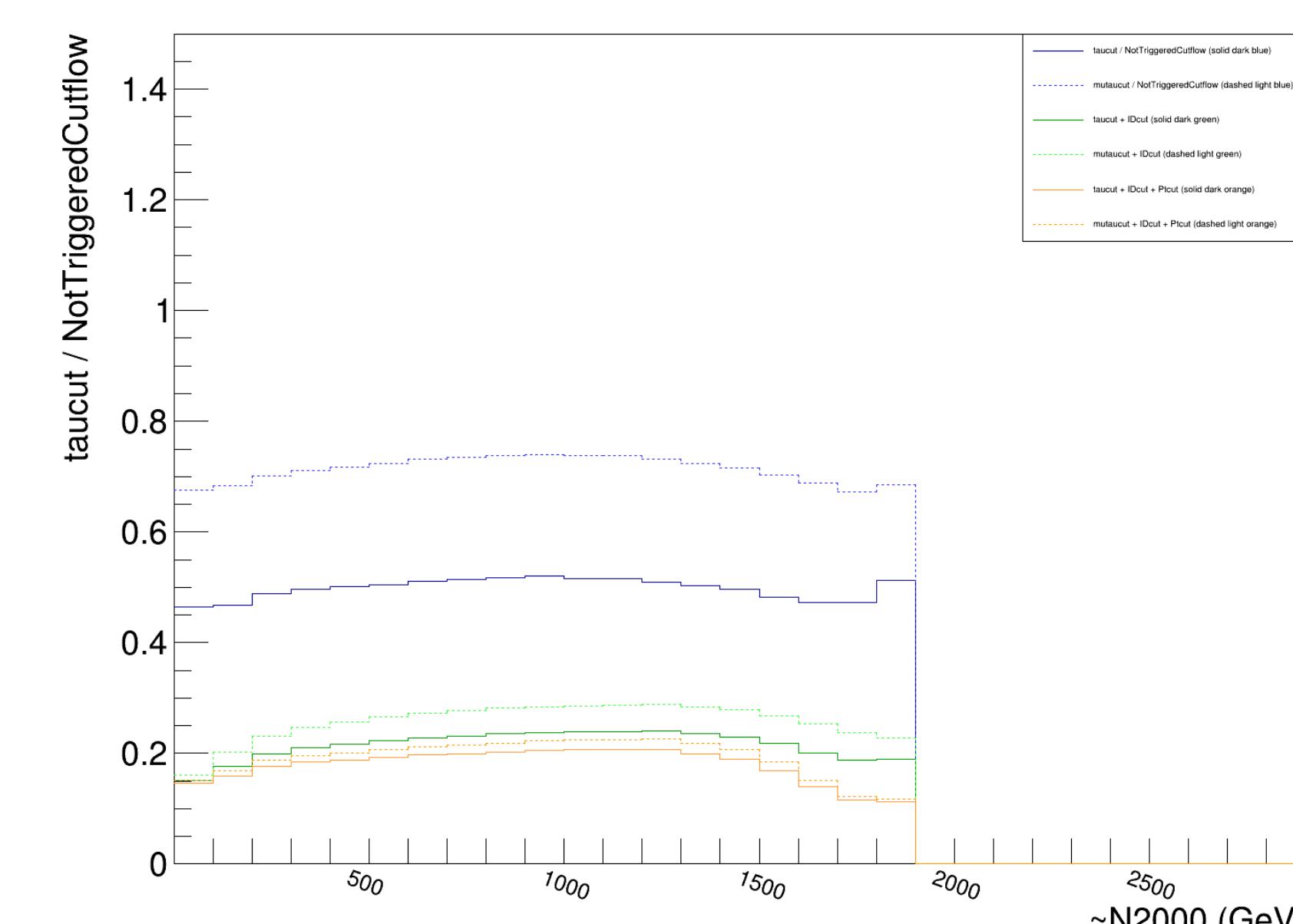
WR 1000

Ratio of taucut to NotTriggeredCutflow



WR 1500

Ratio of taucut to NotTriggeredCutflow



WR 2000

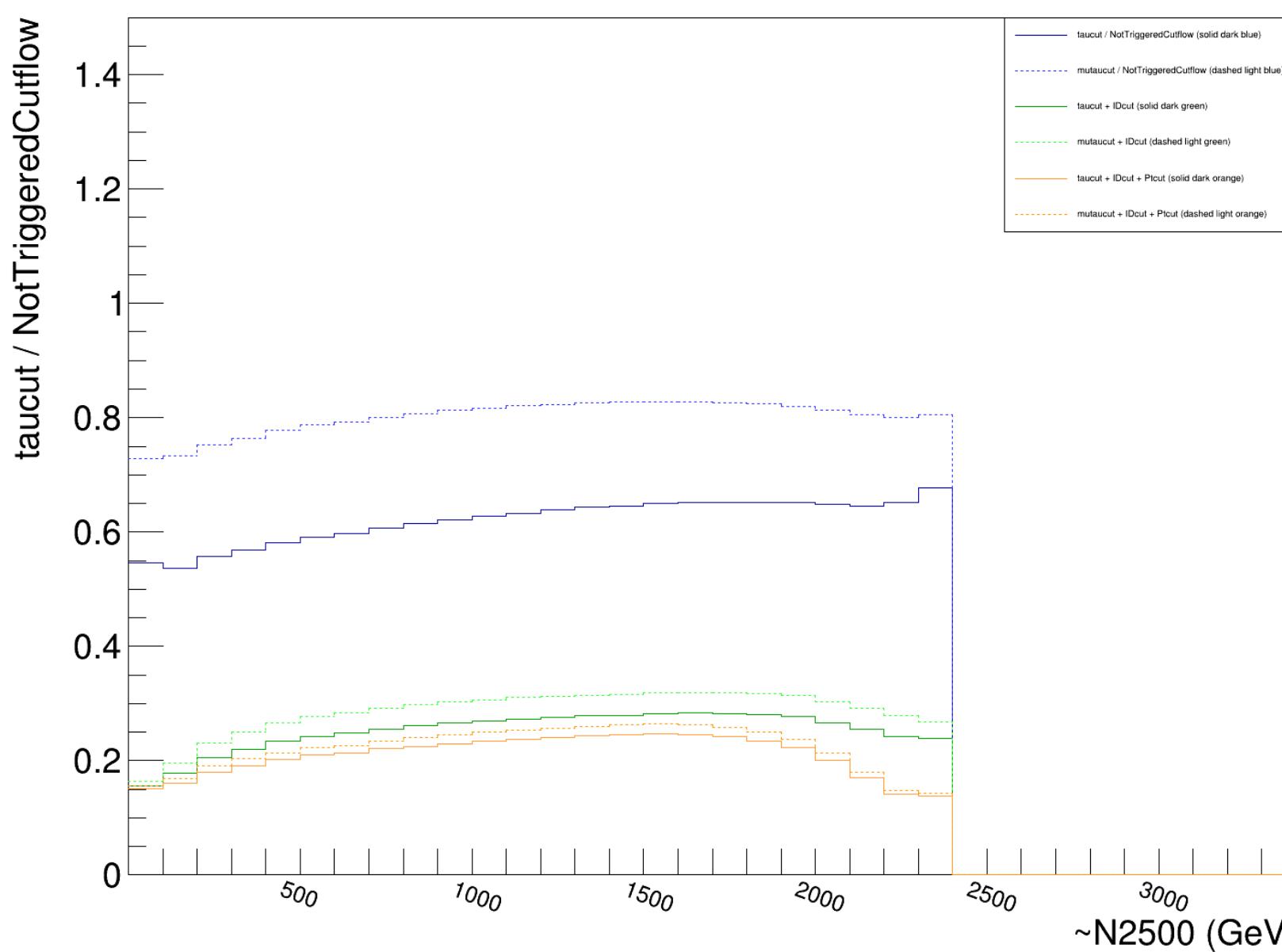
- $W_R$  1000 ~ 2000

# $\mu$ or $\tau$ trigger & $\tau$ trigger

$(P_T + \tau^{\text{ID}} + \tau \text{ trigger} + \text{MET filter}) / \text{MET filter}$

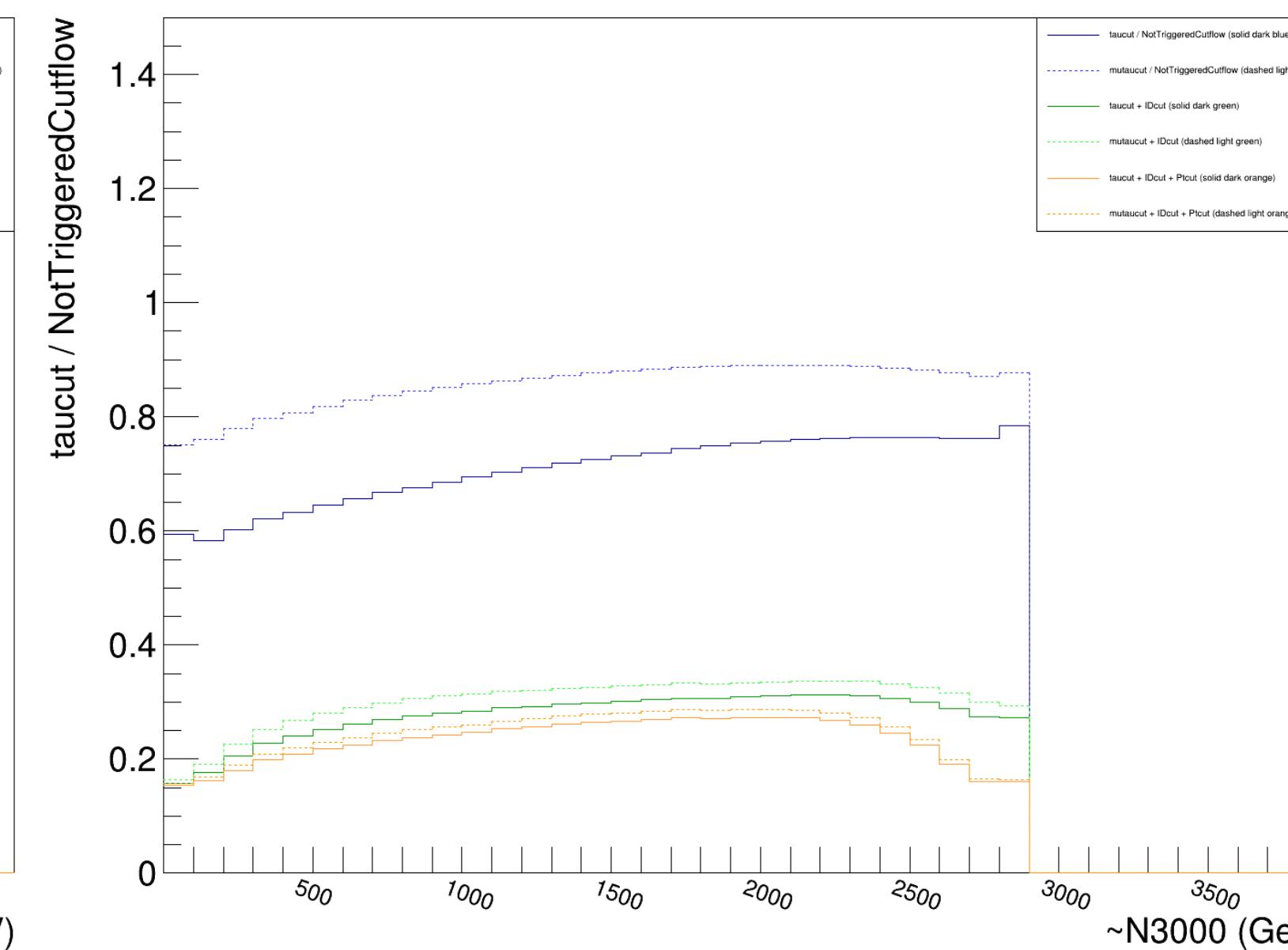
$(P_T + \tau^{\text{ID}} + \tau \text{ trigger or } \mu \text{ trigger} + \text{MET filter}) / \text{MET filter}$

Ratio of taucut to NotTriggeredCutflow



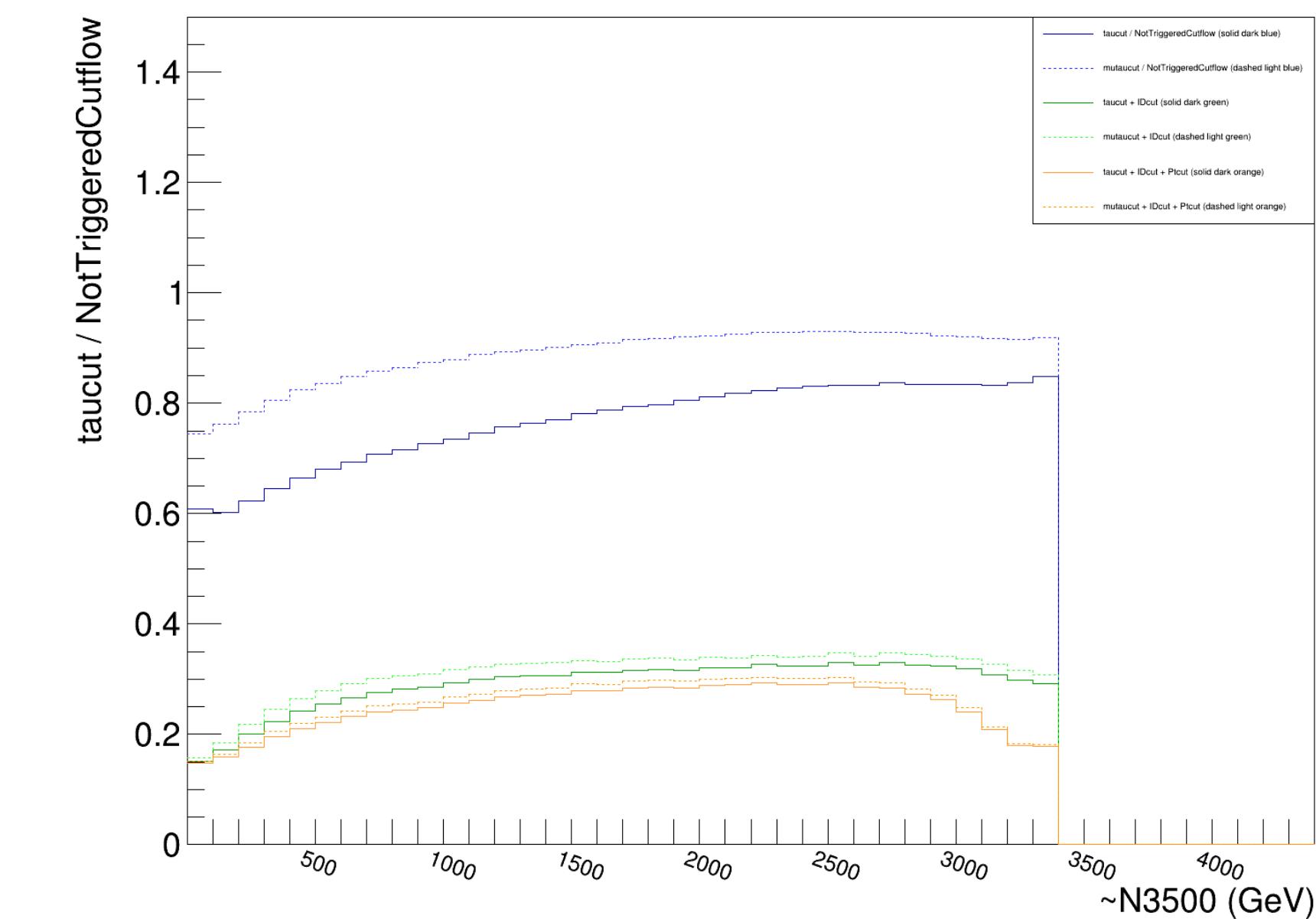
WR 2500

Ratio of taucut to NotTriggeredCutflow



WR 3000

Ratio of taucut to NotTriggeredCutflow



WR 3500

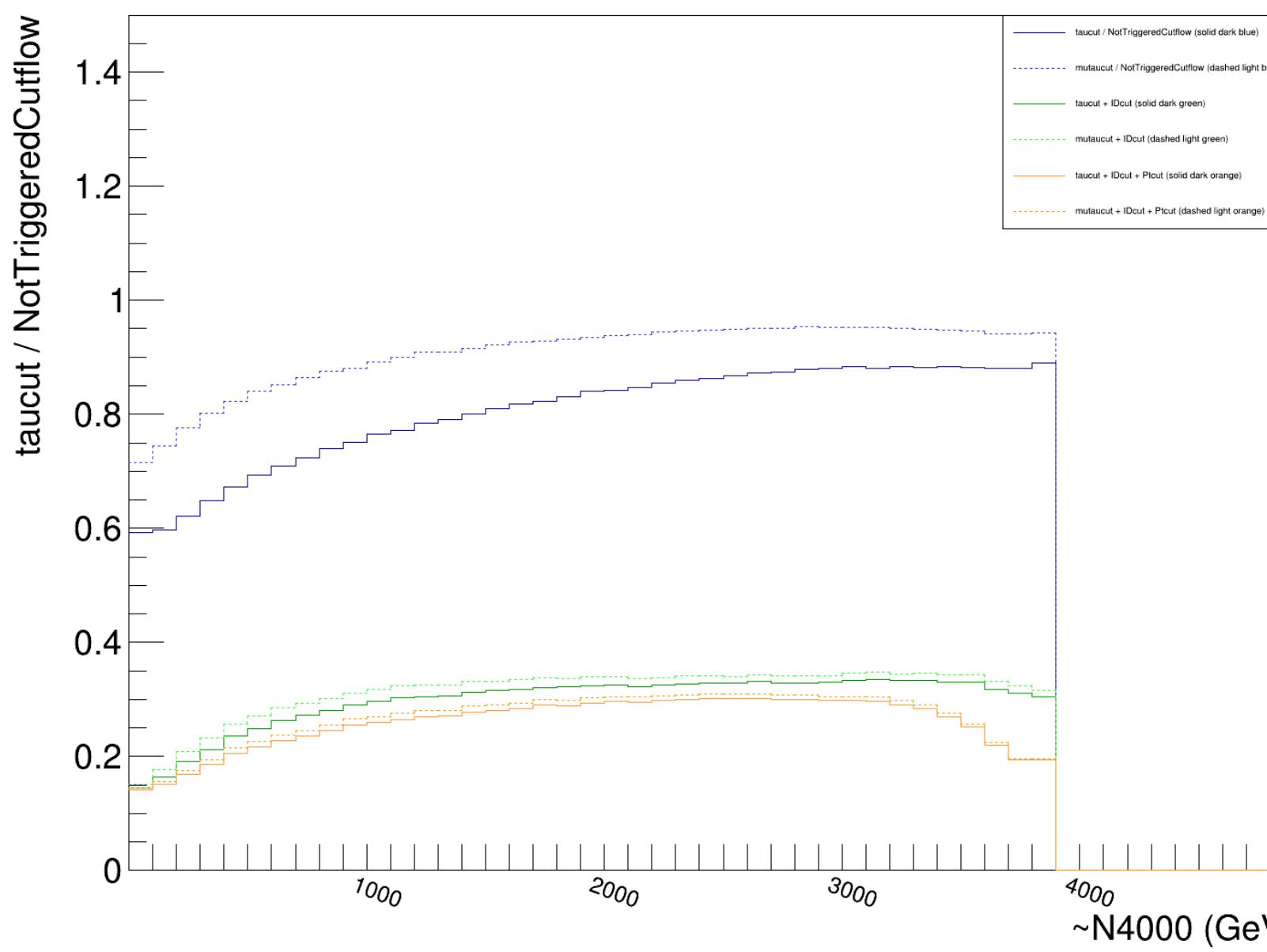
- $W_R$  2500 ~ 3500

# $\mu$ or $\tau$ trigger & $\tau$ trigger

$(P_T + \tau^{\text{ID}} + \tau \text{ trigger} + \text{MET filter}) / \text{MET filter}$

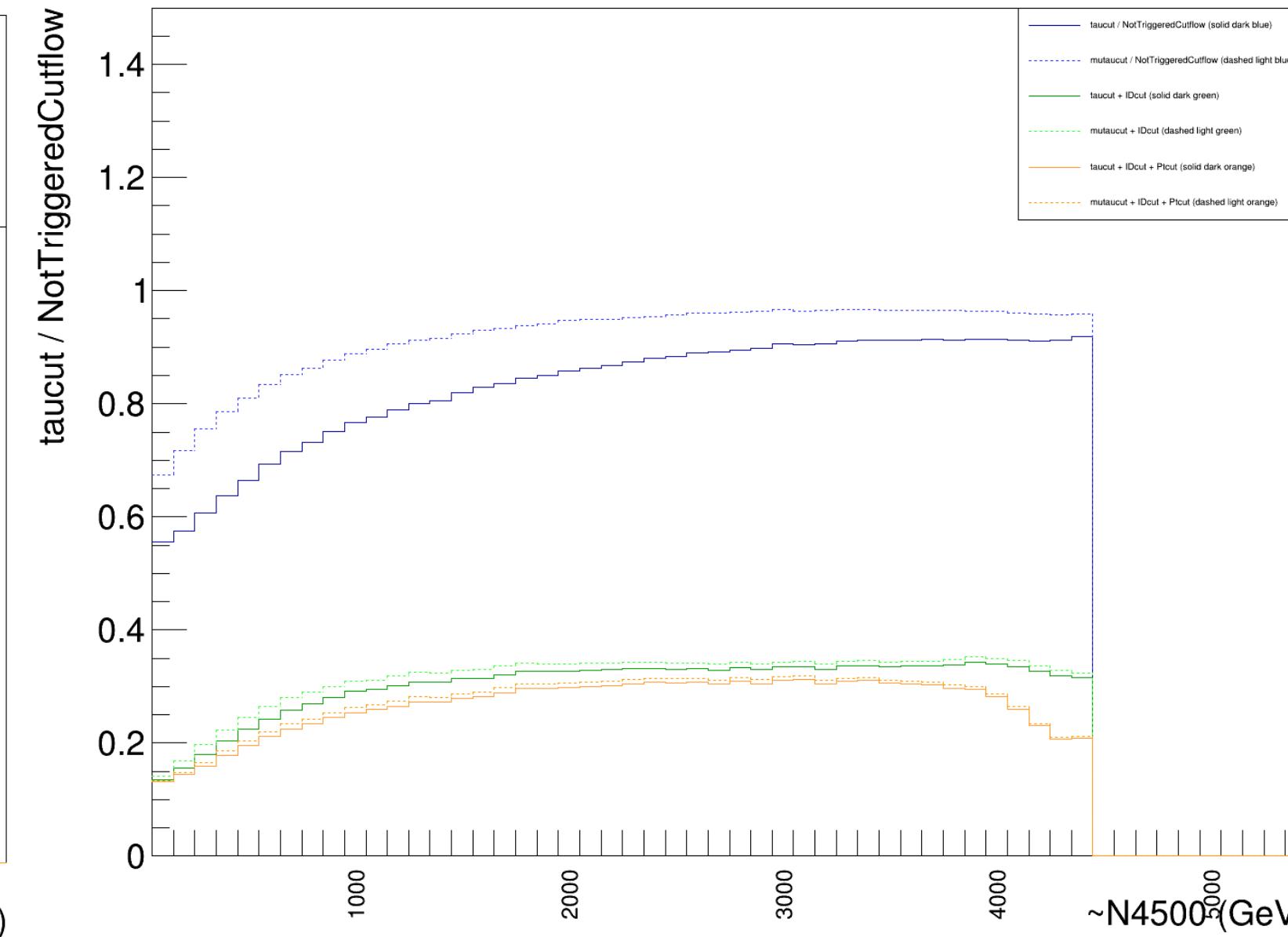
$(P_T + \tau^{\text{ID}} + \tau \text{ trigger or } \mu \text{ trigger} + \text{MET filter}) / \text{MET filter}$

Ratio of taucut to NotTriggeredCutflow



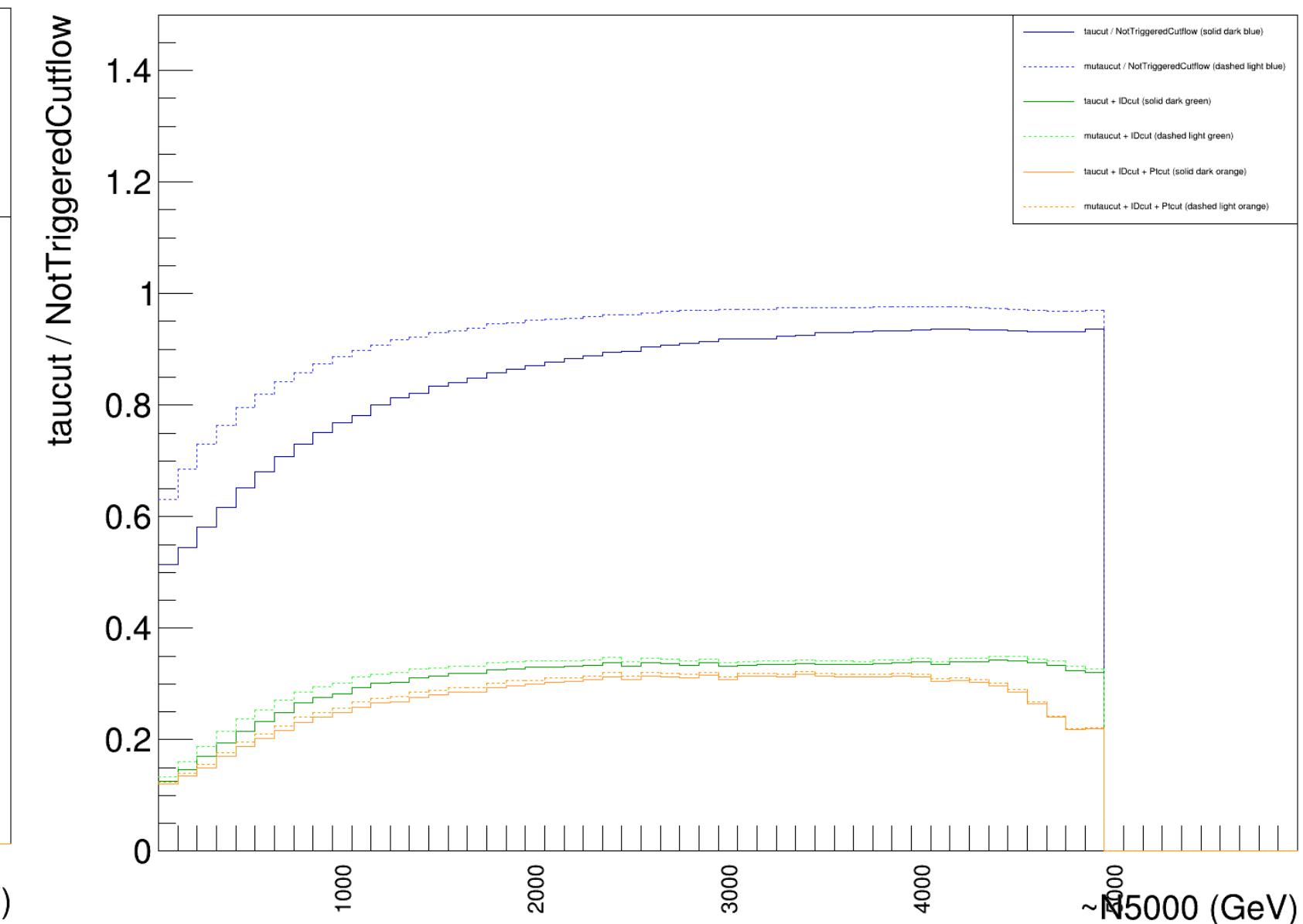
WR 4000

Ratio of taucut to NotTriggeredCutflow



WR 4500

Ratio of taucut to NotTriggeredCutflow



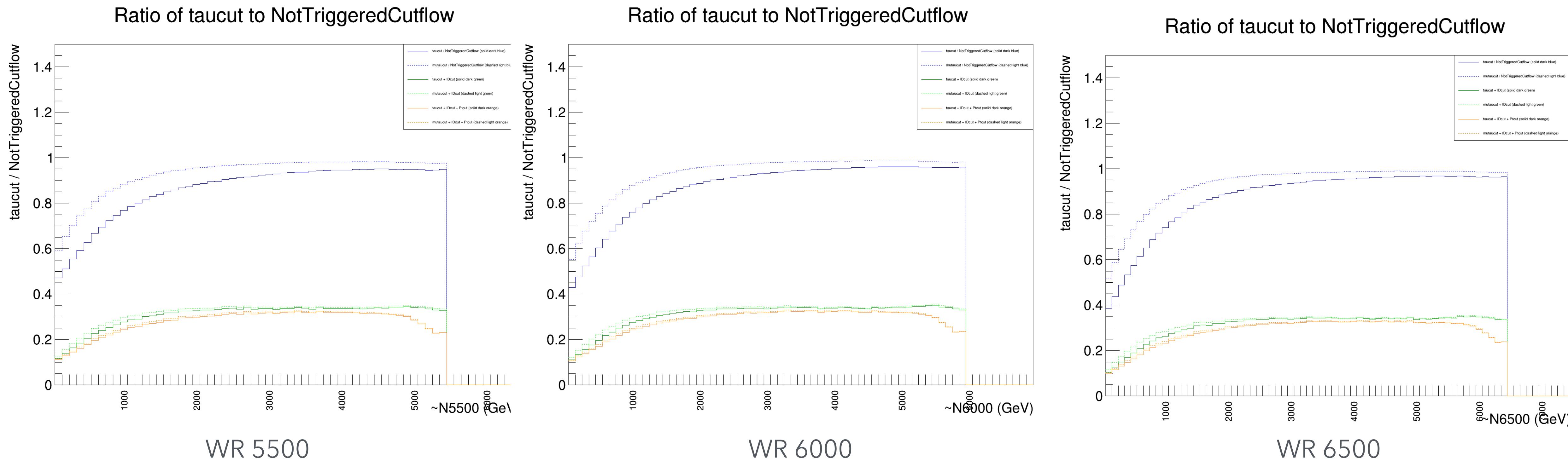
WR 5000

- $W_R$  4000~5000

# $\mu$ or $\tau$ trigger & $\tau$ trigger

$(P_T + \tau^{\text{ID}} + \tau \text{ trigger} + \text{MET filter}) / \text{MET filter}$

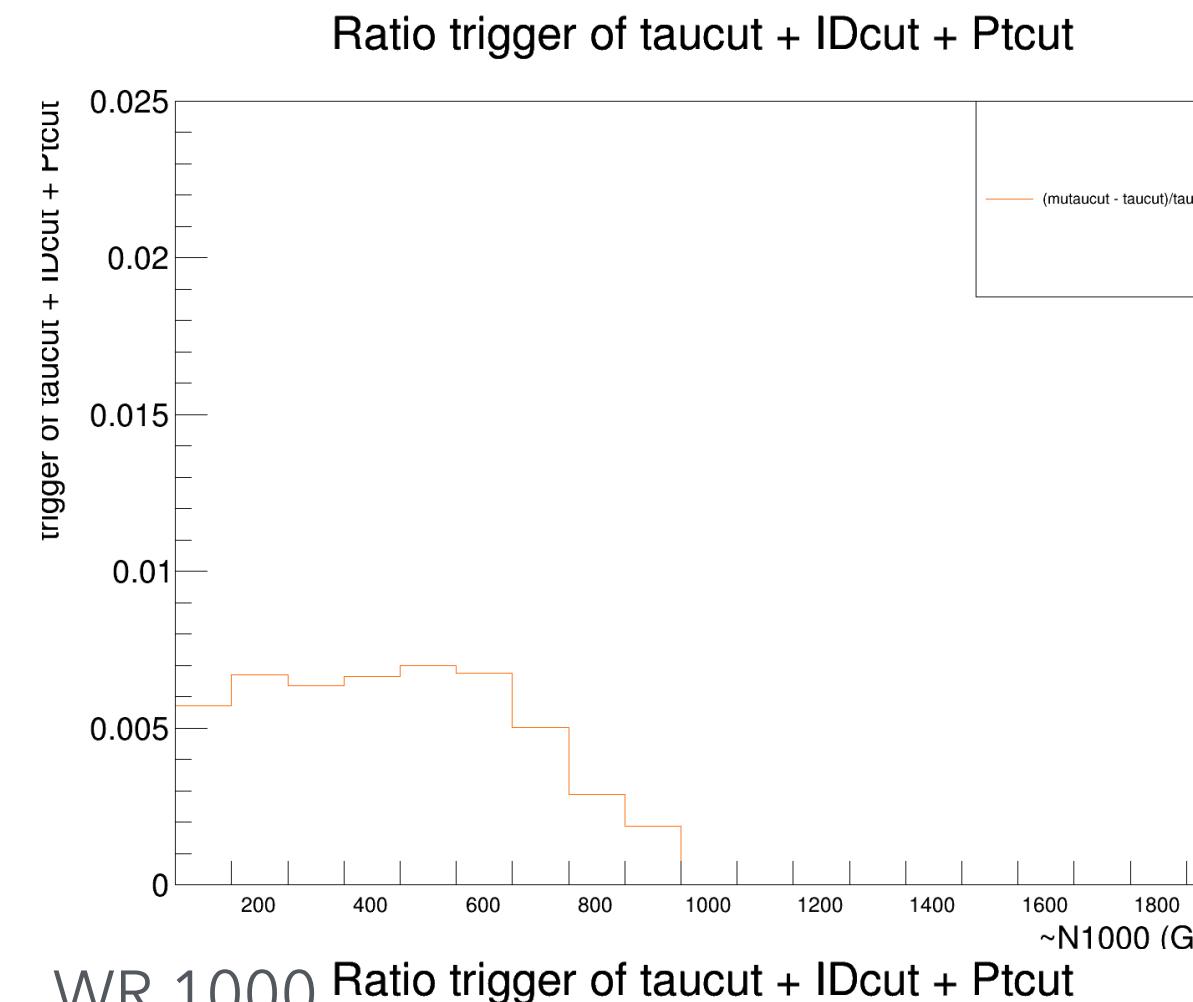
$(P_T + \tau^{\text{ID}} + \tau \text{ trigger or } \mu \text{ trigger} + \text{MET filter}) / \text{MET filter}$



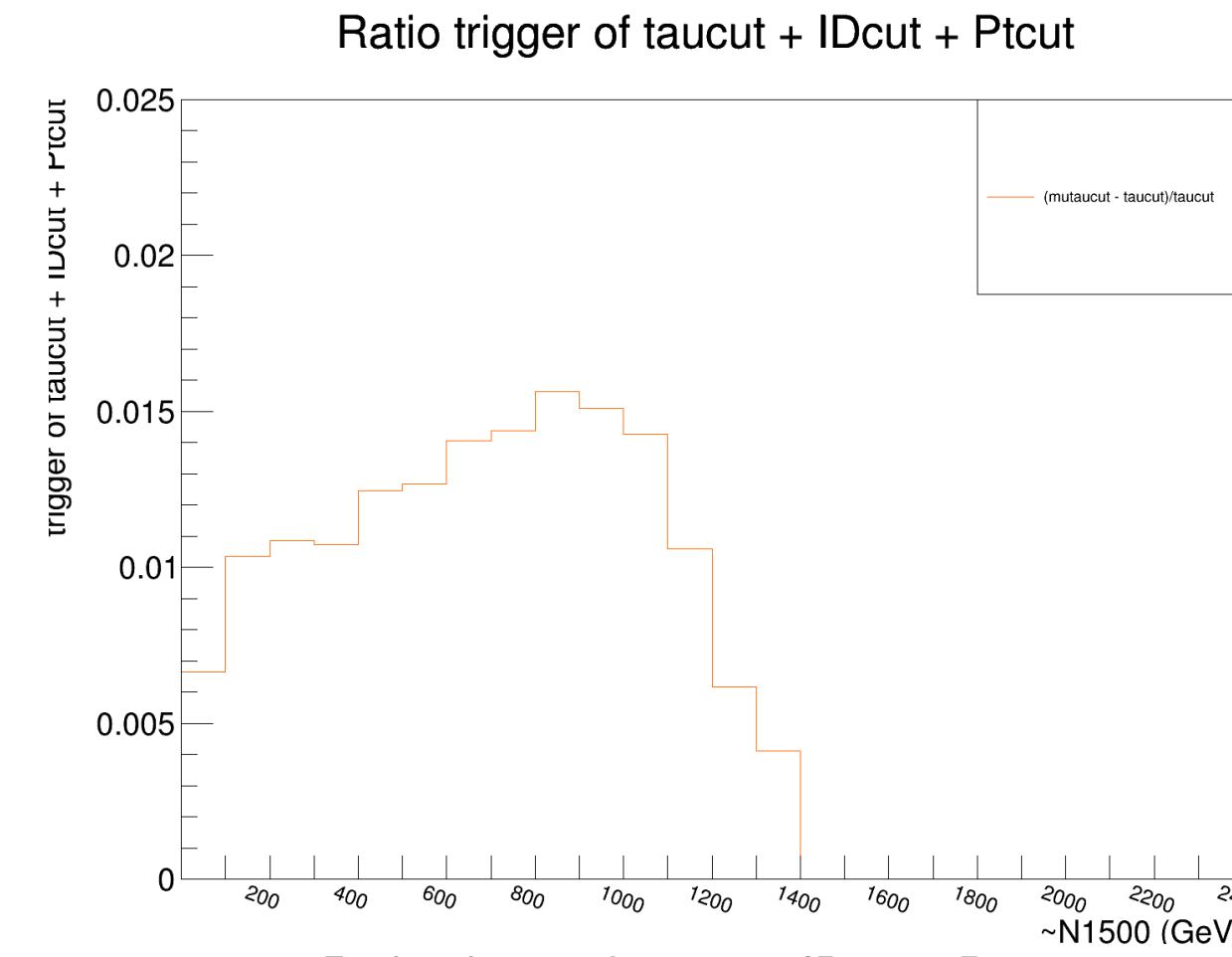
- $W_R$  5500~6500

# $\mu$ or $\tau$ trigger - $\tau$ trigger

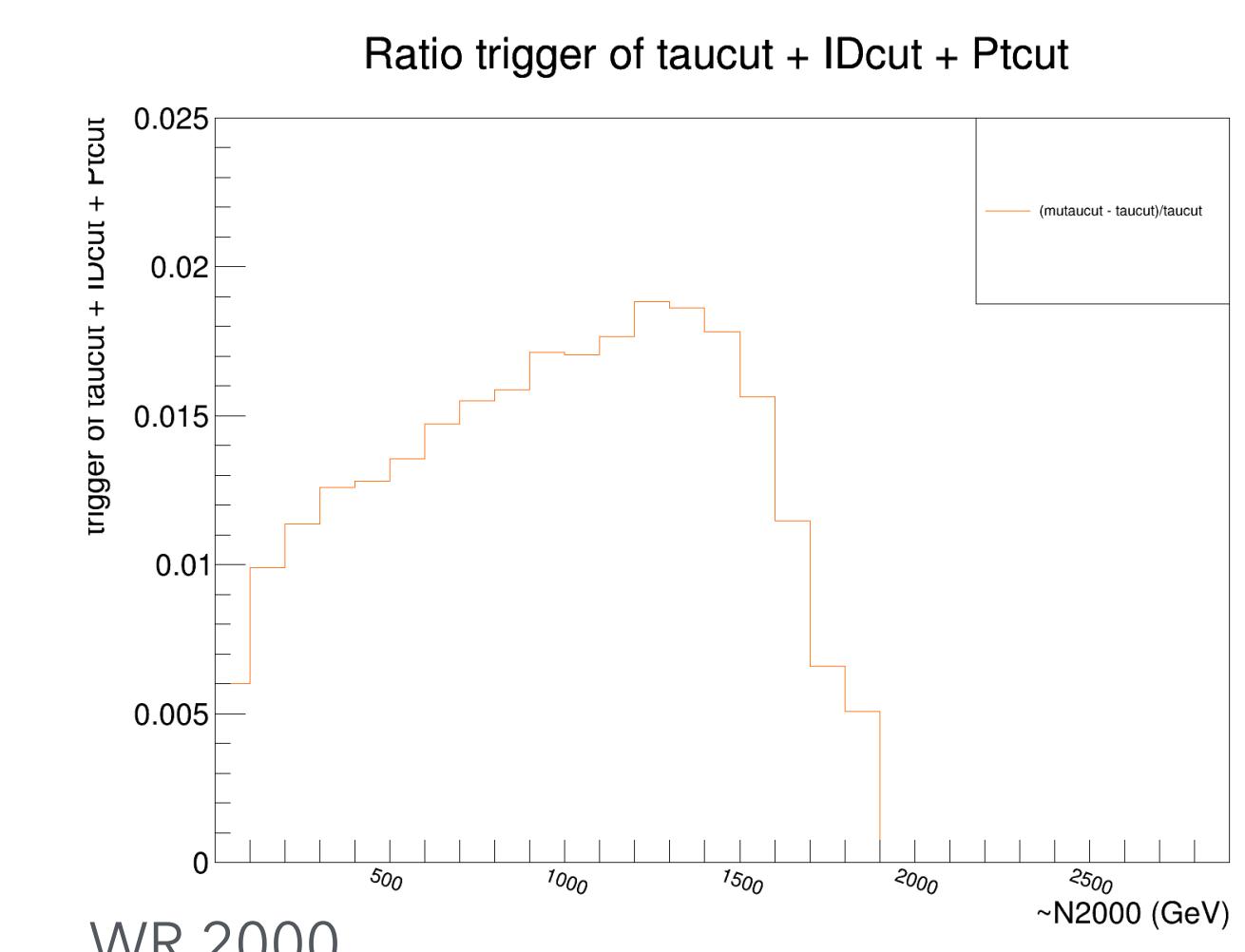
( $\tau$  trigger &  $\mu$ trigger -  $\tau$  trigger)/ MET filter



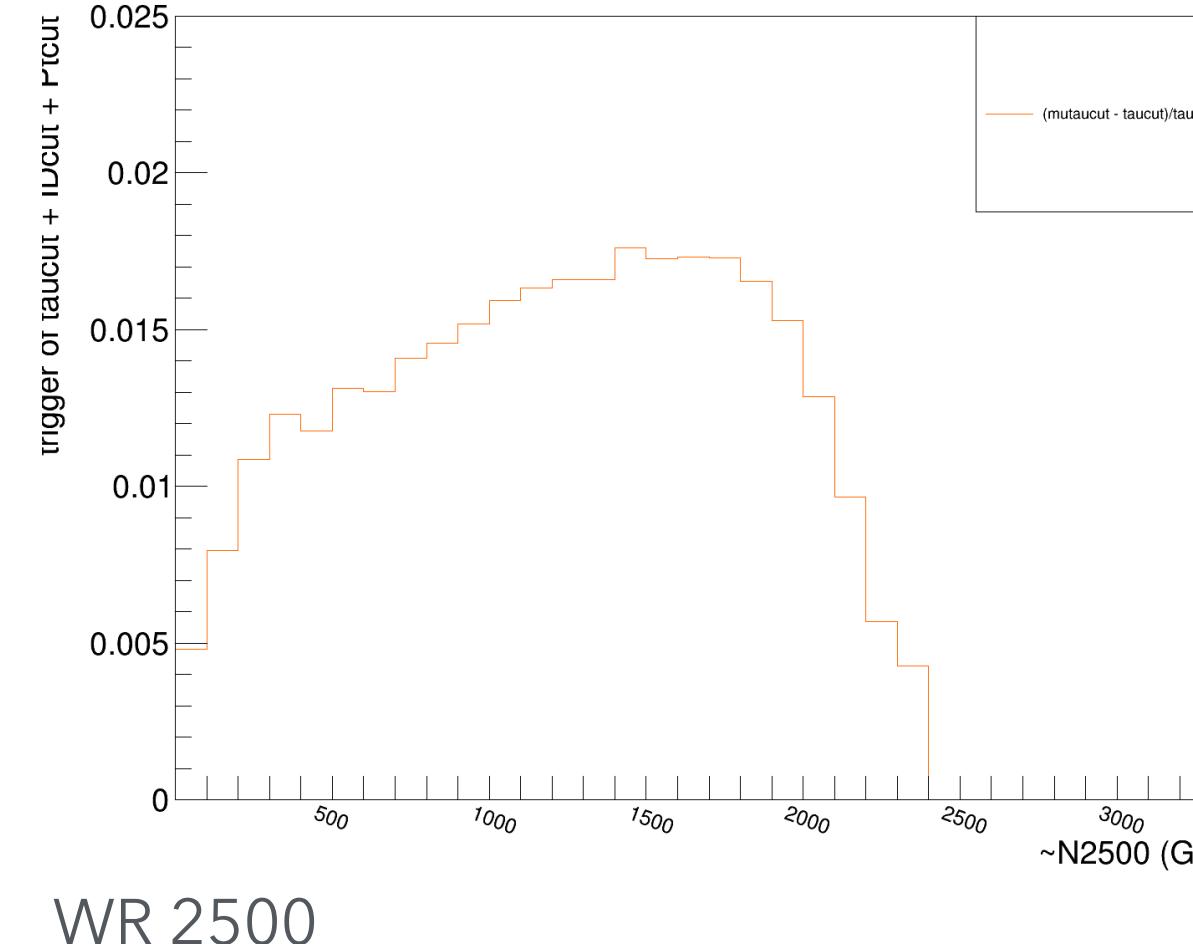
WR 1000 Ratio trigger of taucut + IDcut + Ptcut



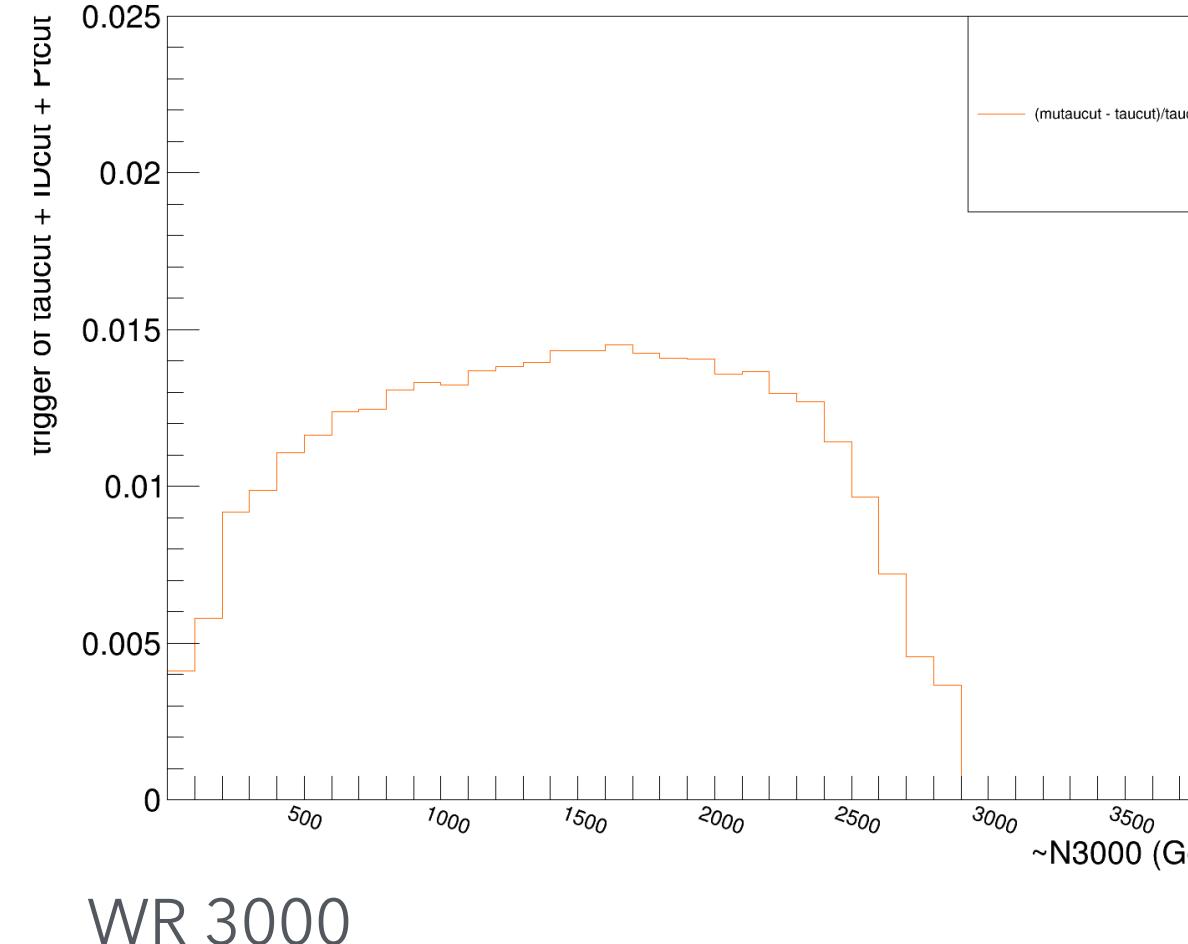
WR 1500 Ratio trigger of taucut + IDcut + Ptcut



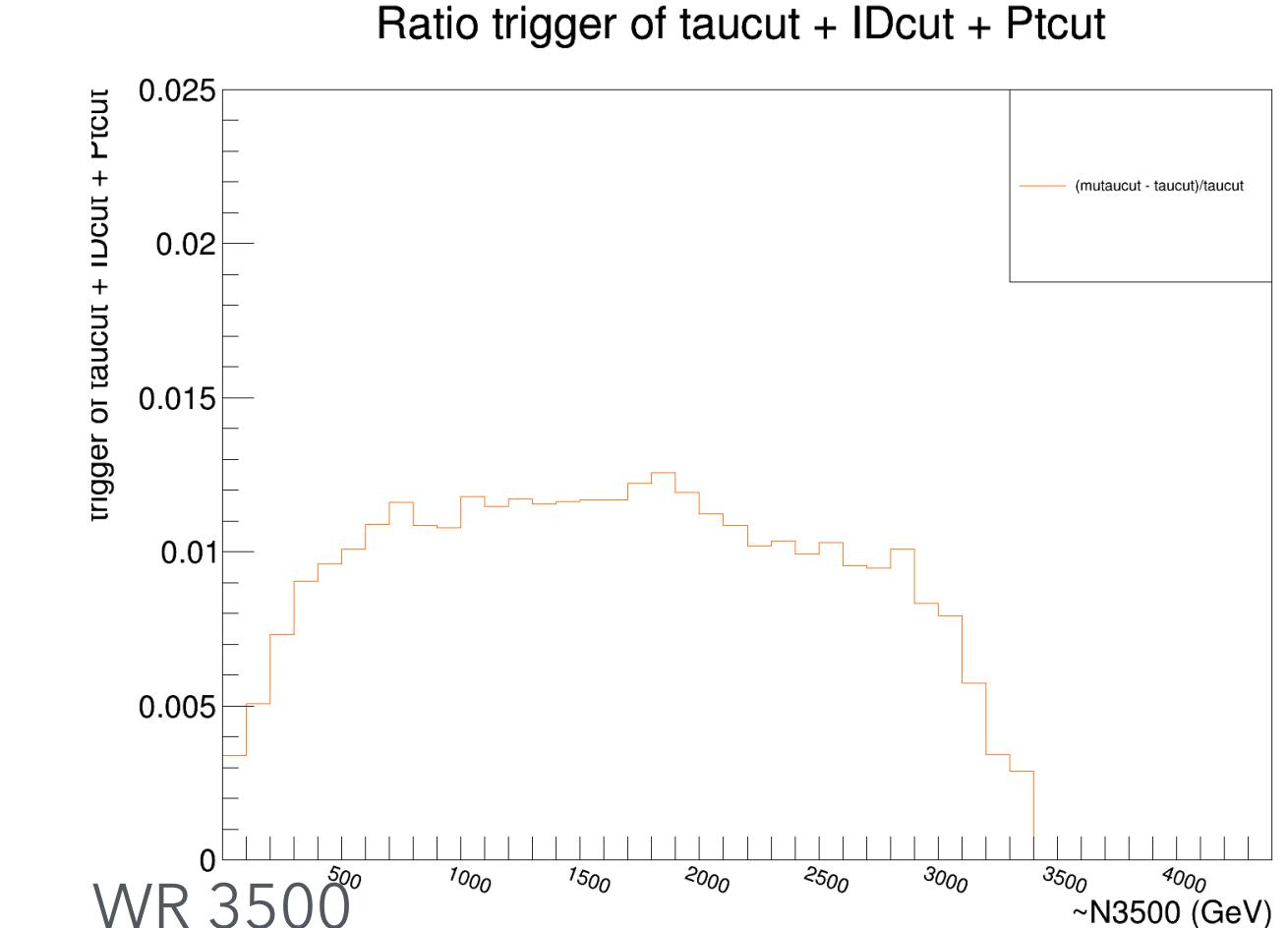
WR 2000 Ratio trigger of taucut + IDcut + Ptcut



WR 2500



WR 3000

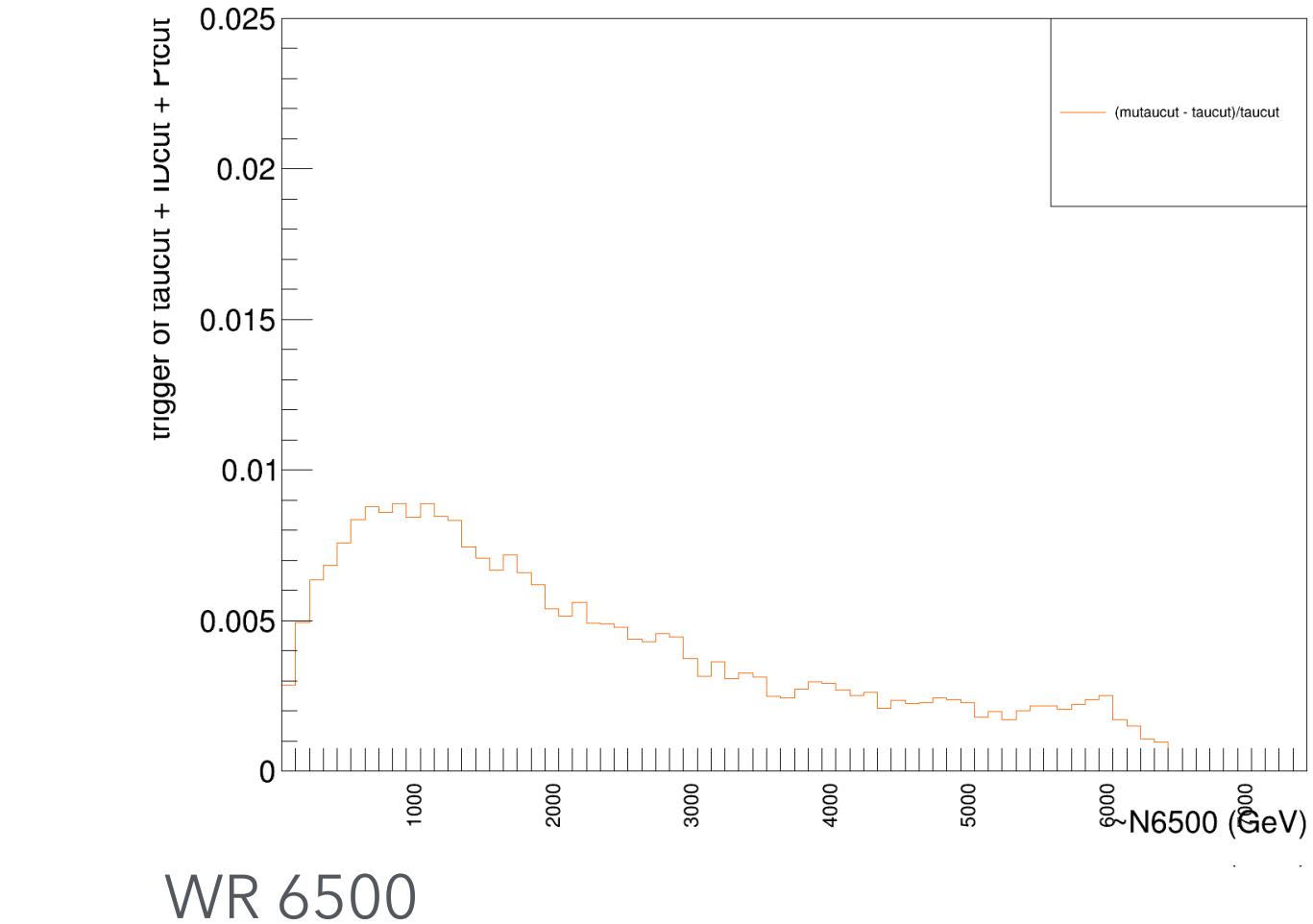
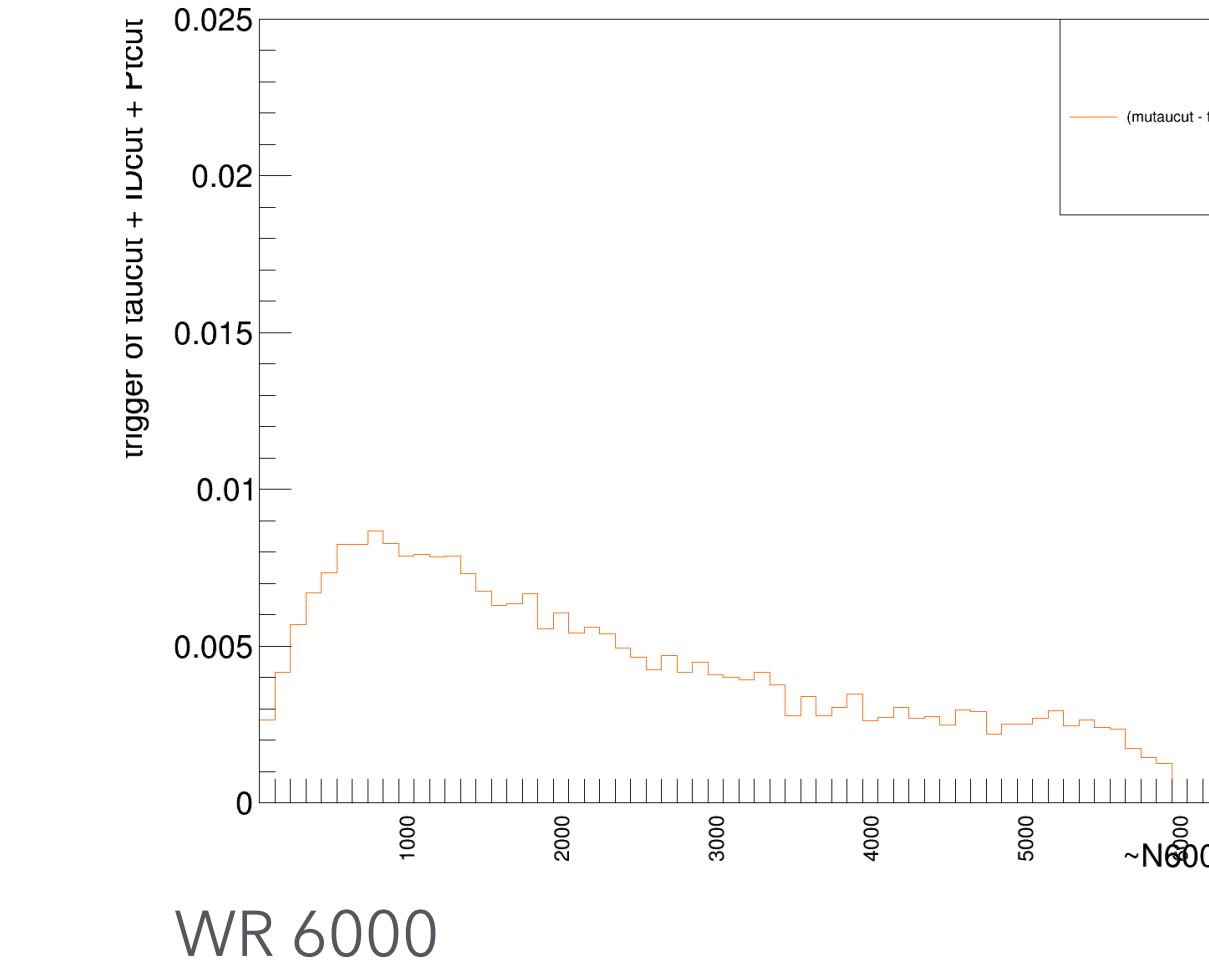
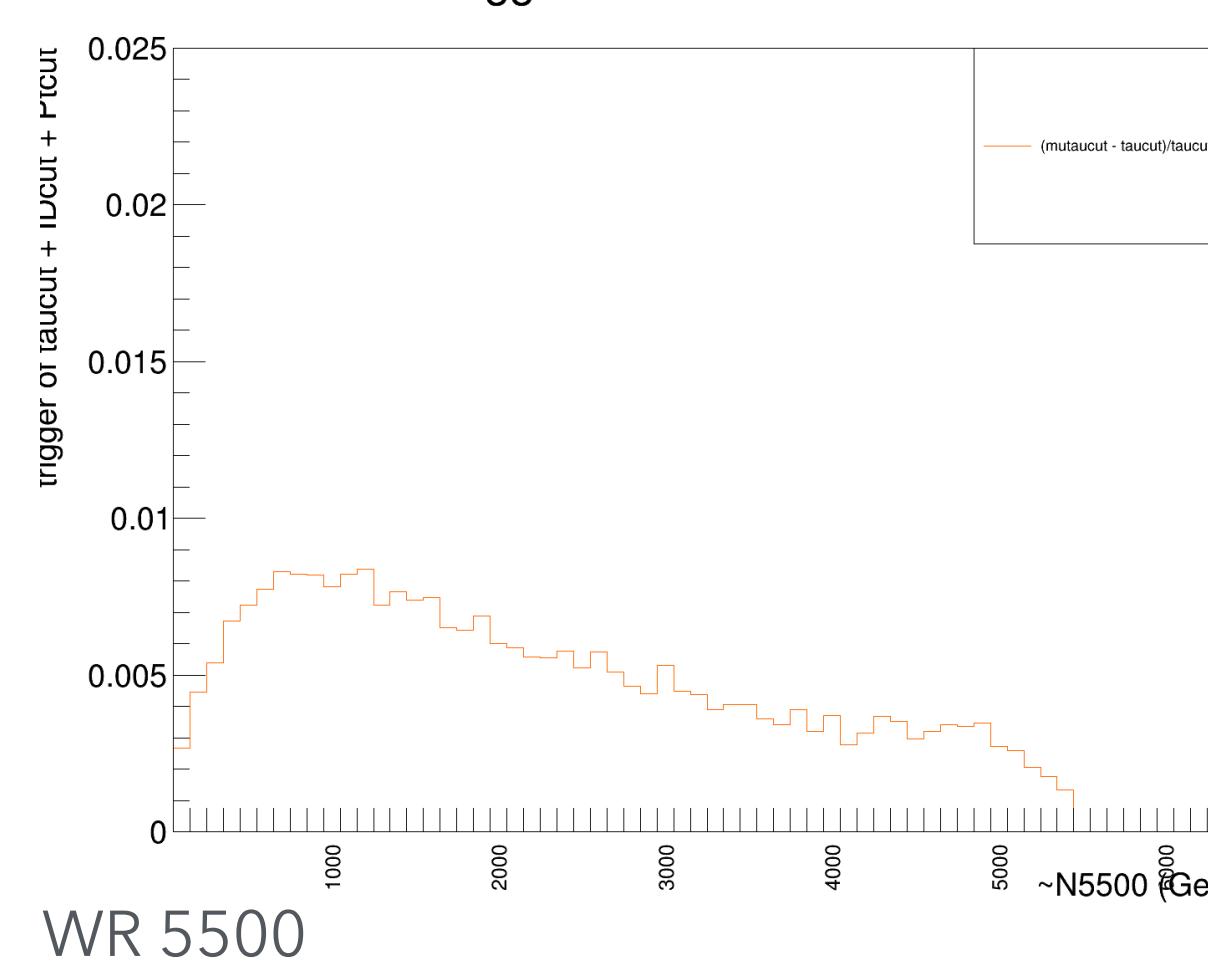
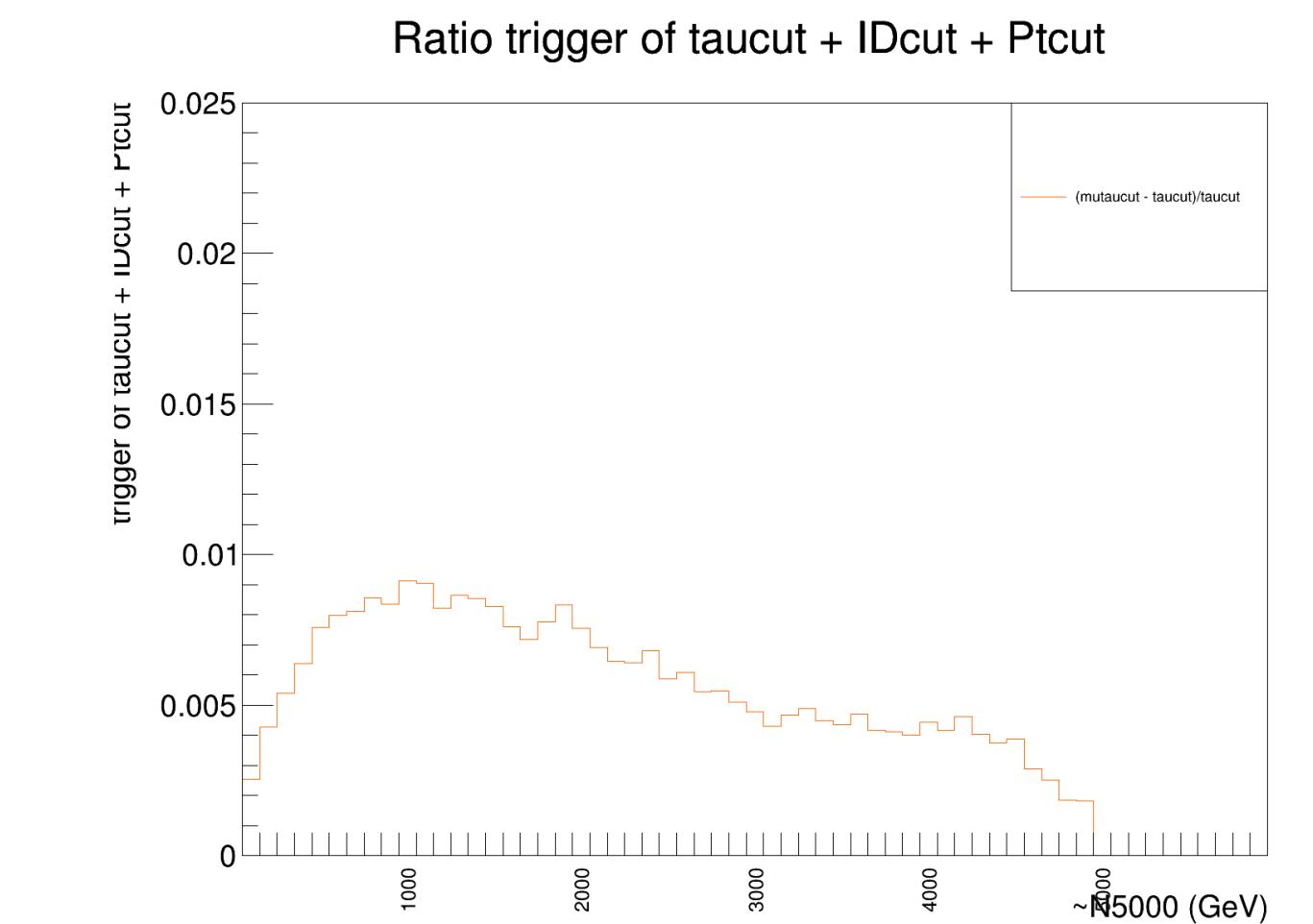
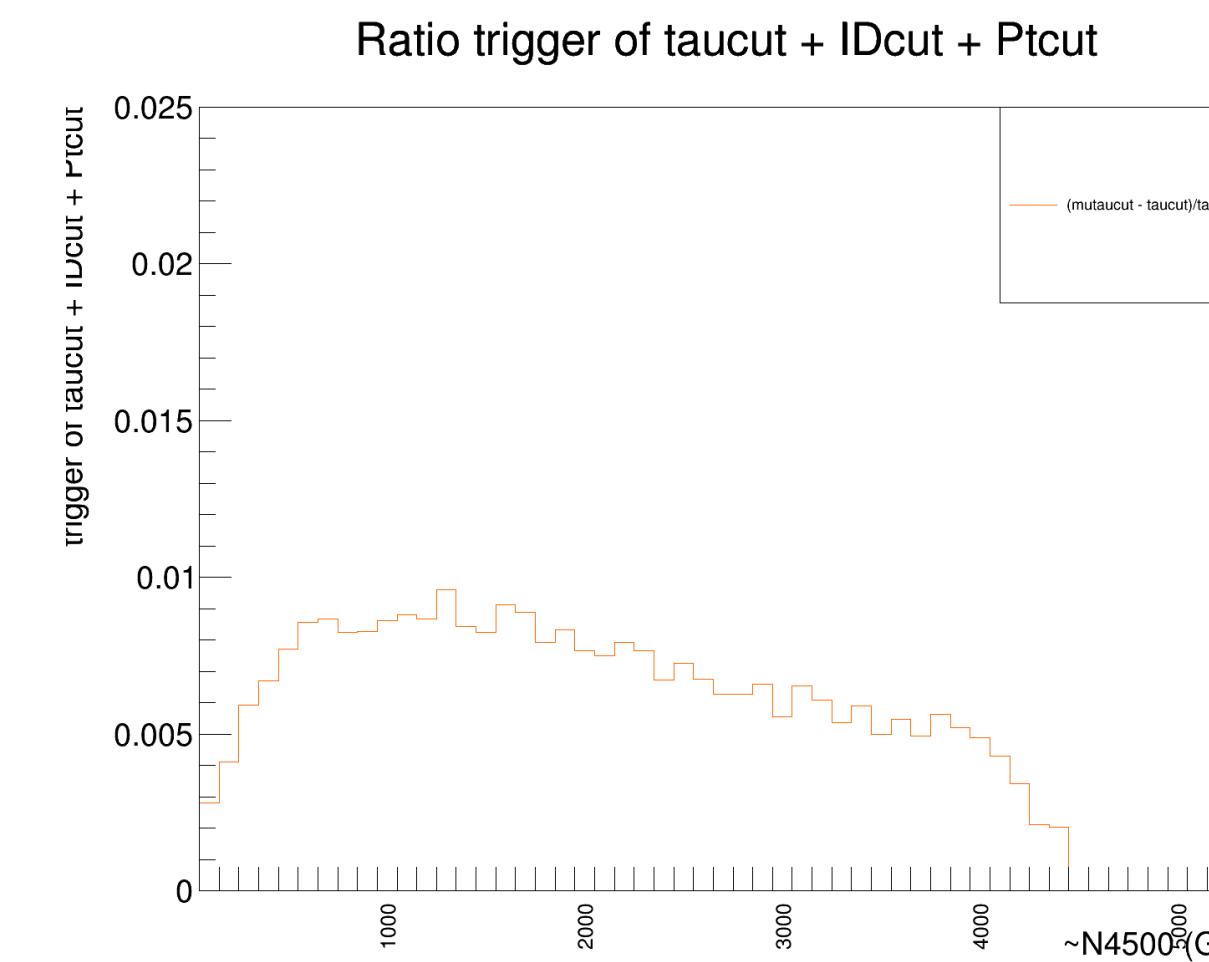
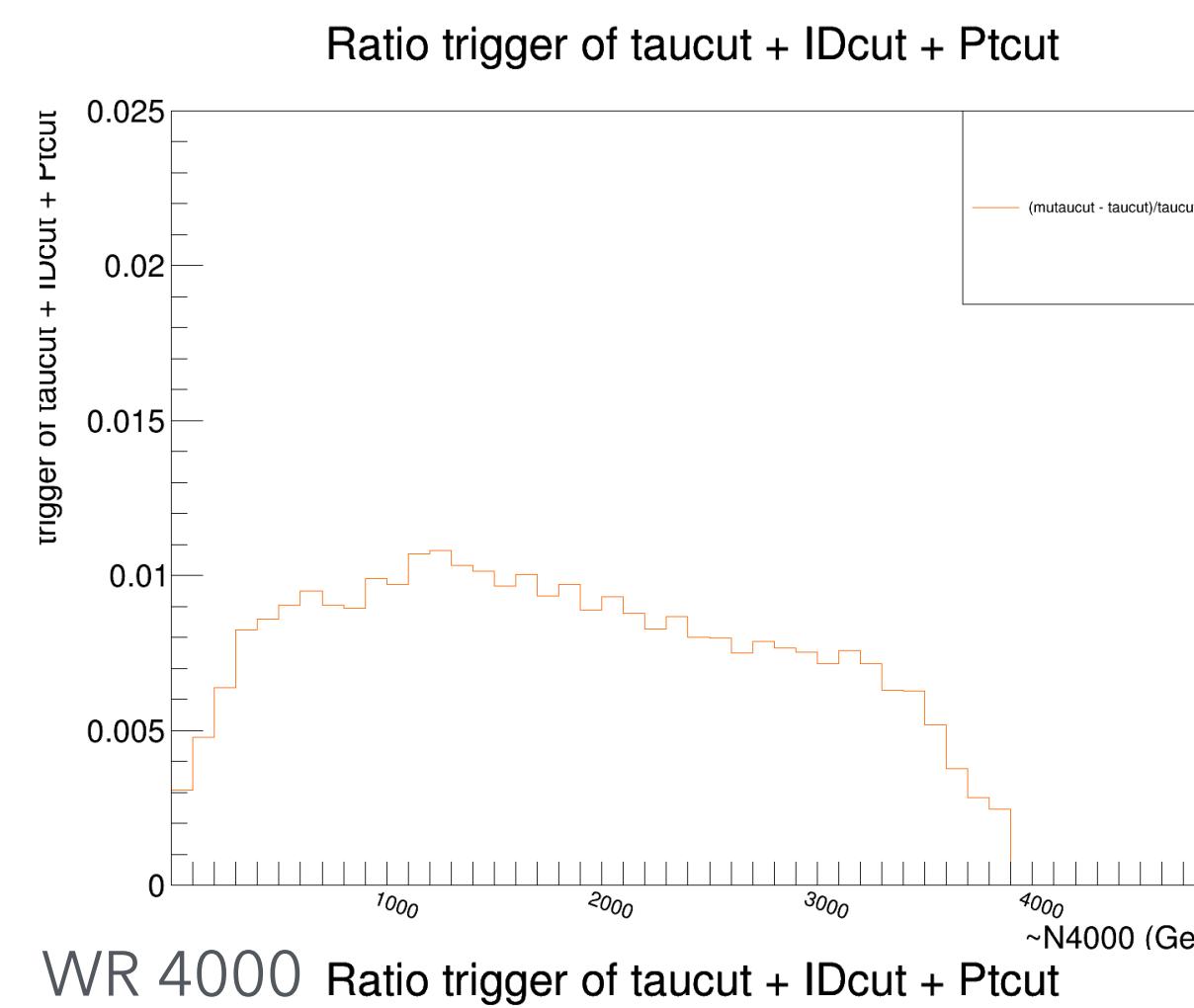


WR 3500

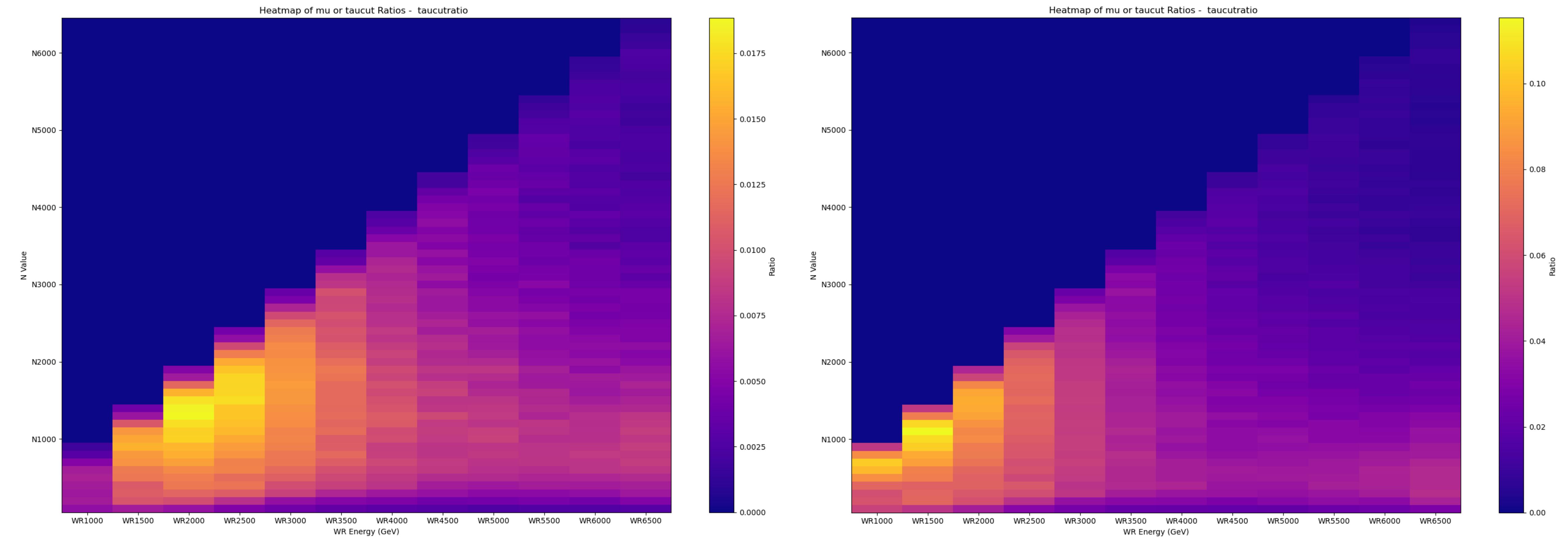
- $W_R$  1000~3500

# $\mu$ or $\tau$ trigger - $\tau$ trigger

( $\tau$  trigger &  $\mu$ trigger -  $\tau$  trigger)/ MET filter



- $W_R$  4000~6500



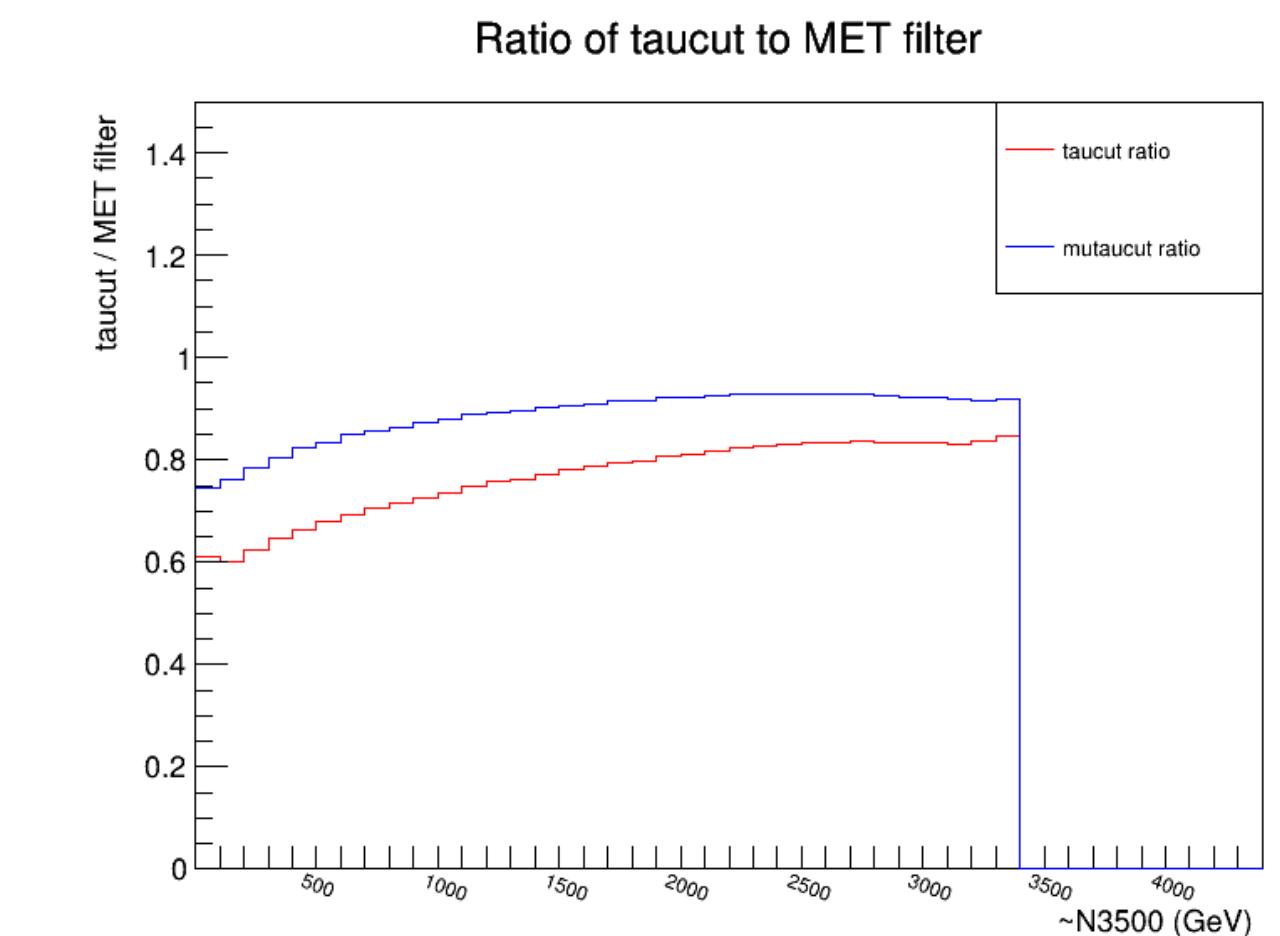
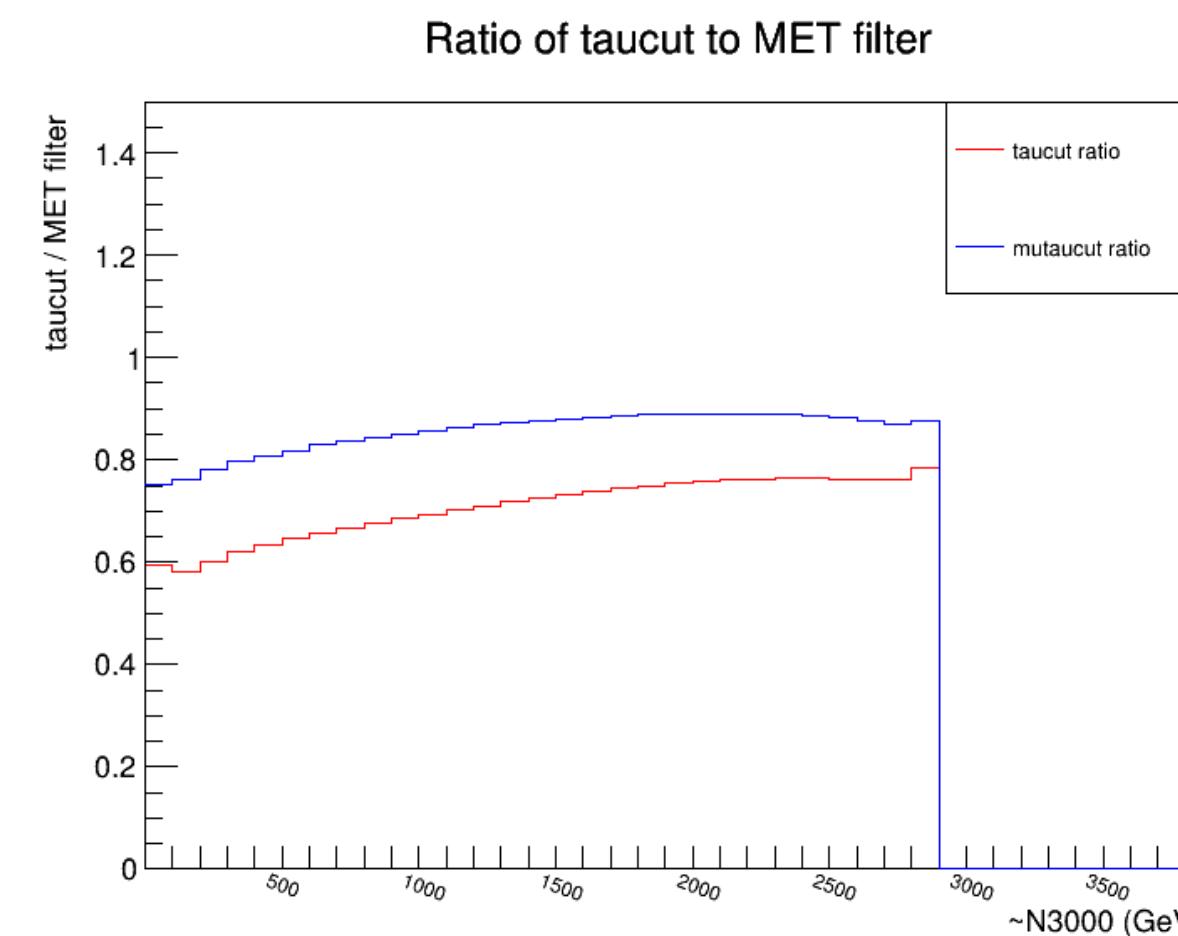
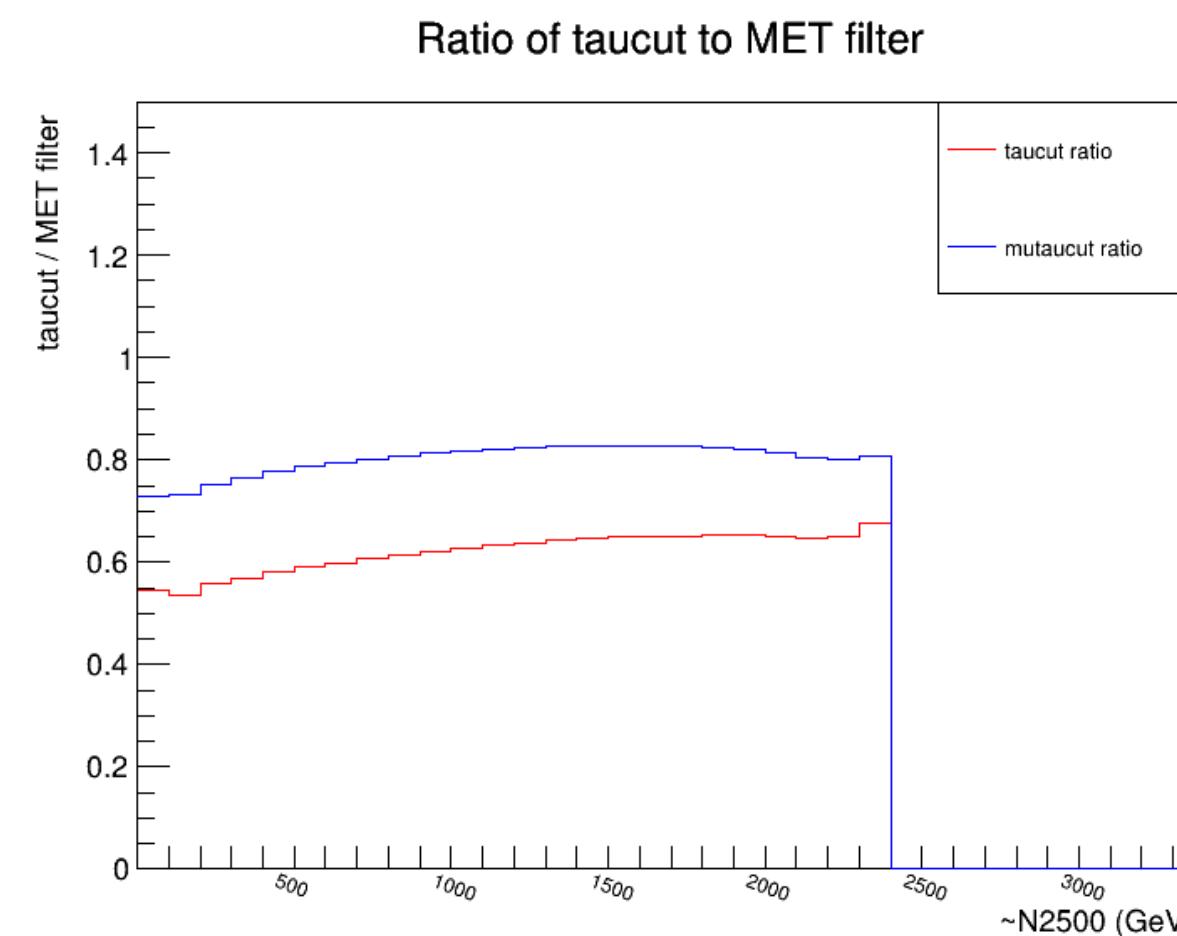
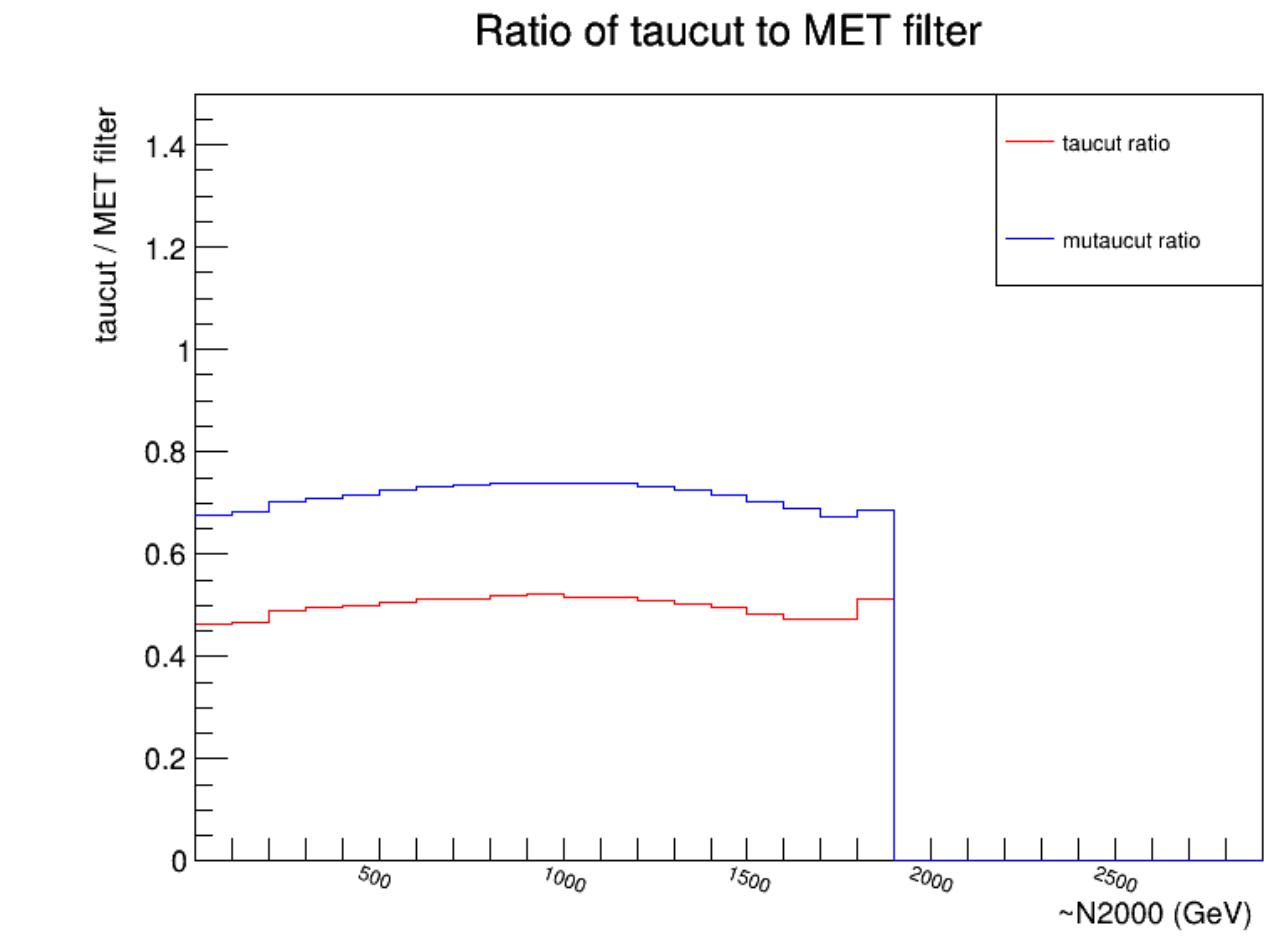
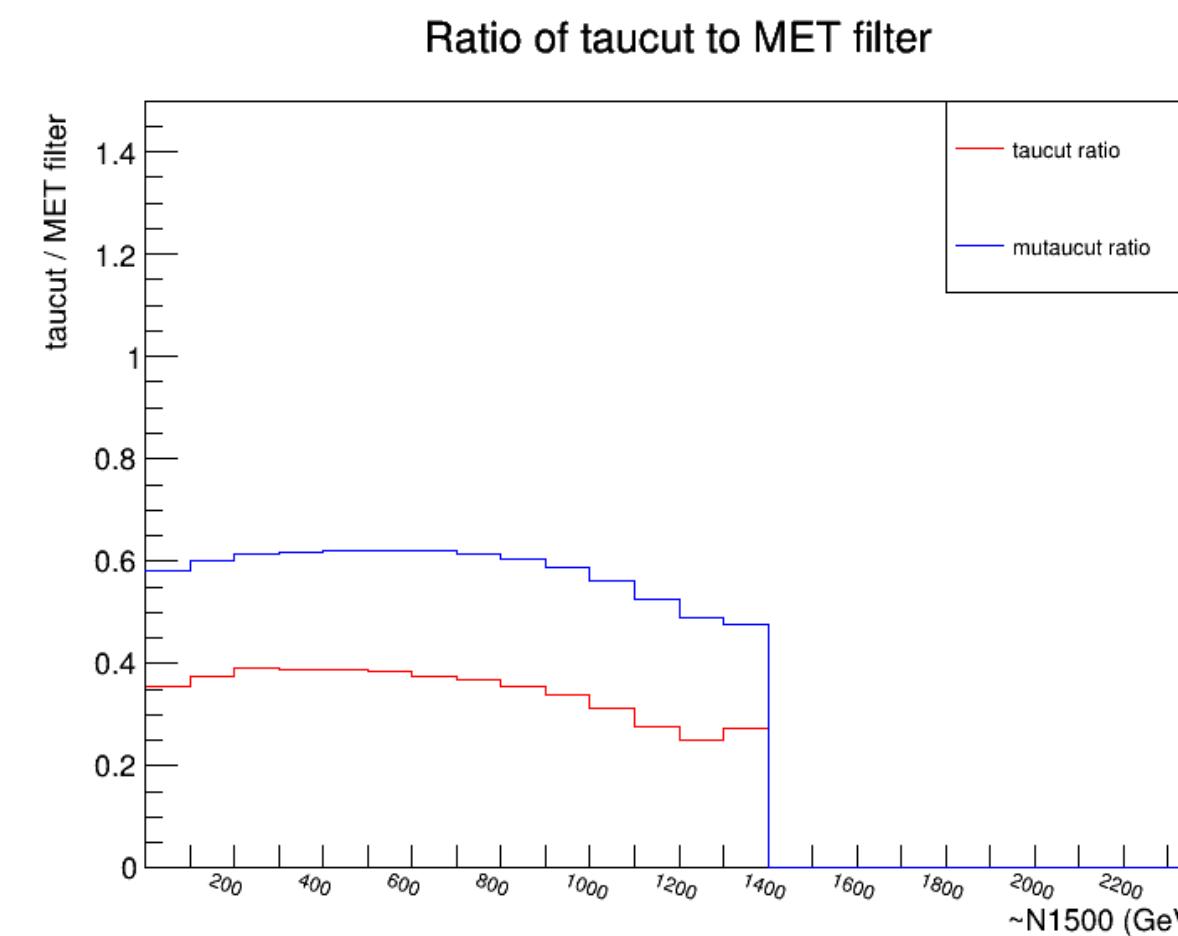
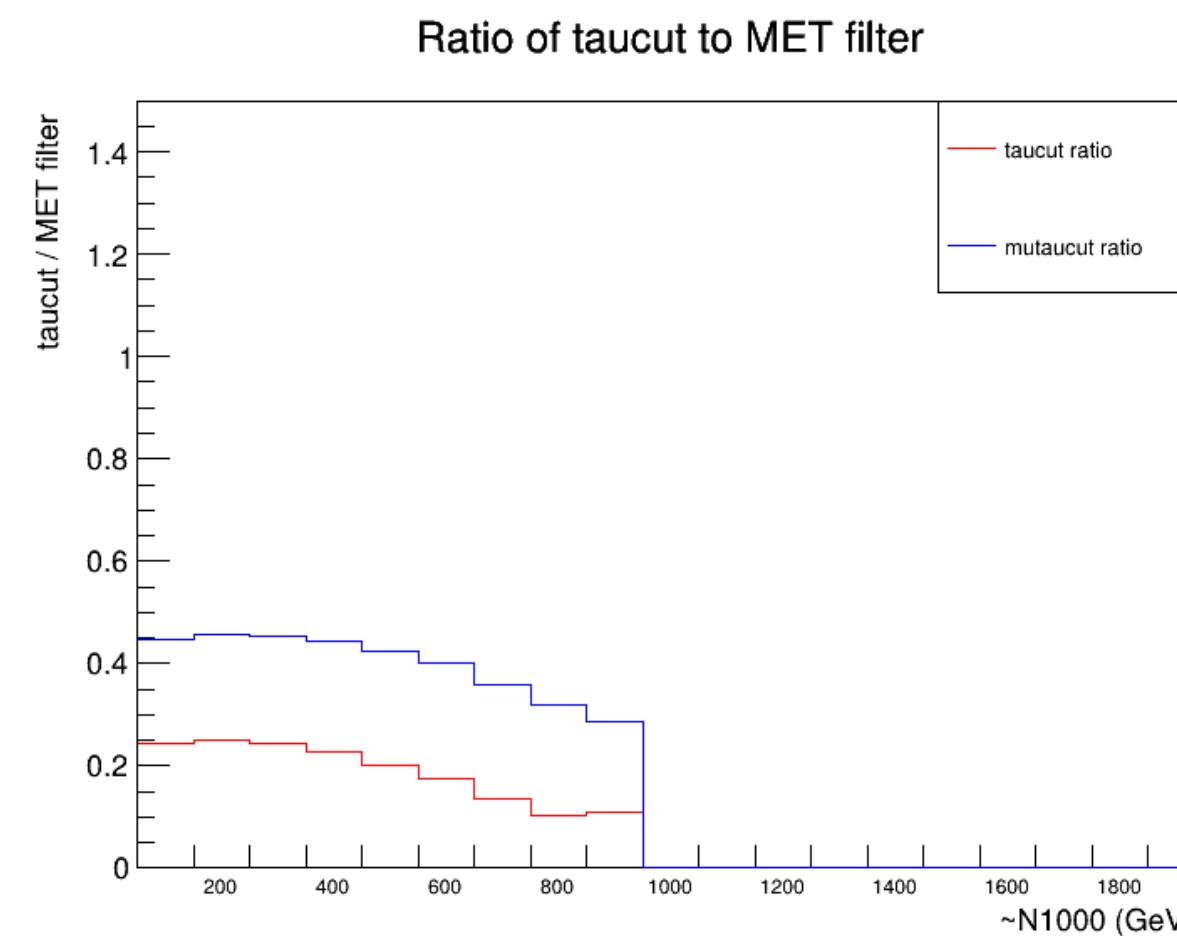
$(\tau \text{ trigger} \& \mu \text{trigger} - \tau \text{ trigger}) / \text{MET filter}$

$(\tau \text{ trigger} \& \mu \text{trigger} - \tau \text{ trigger}) / \tau \text{ trigger}$

# Backup

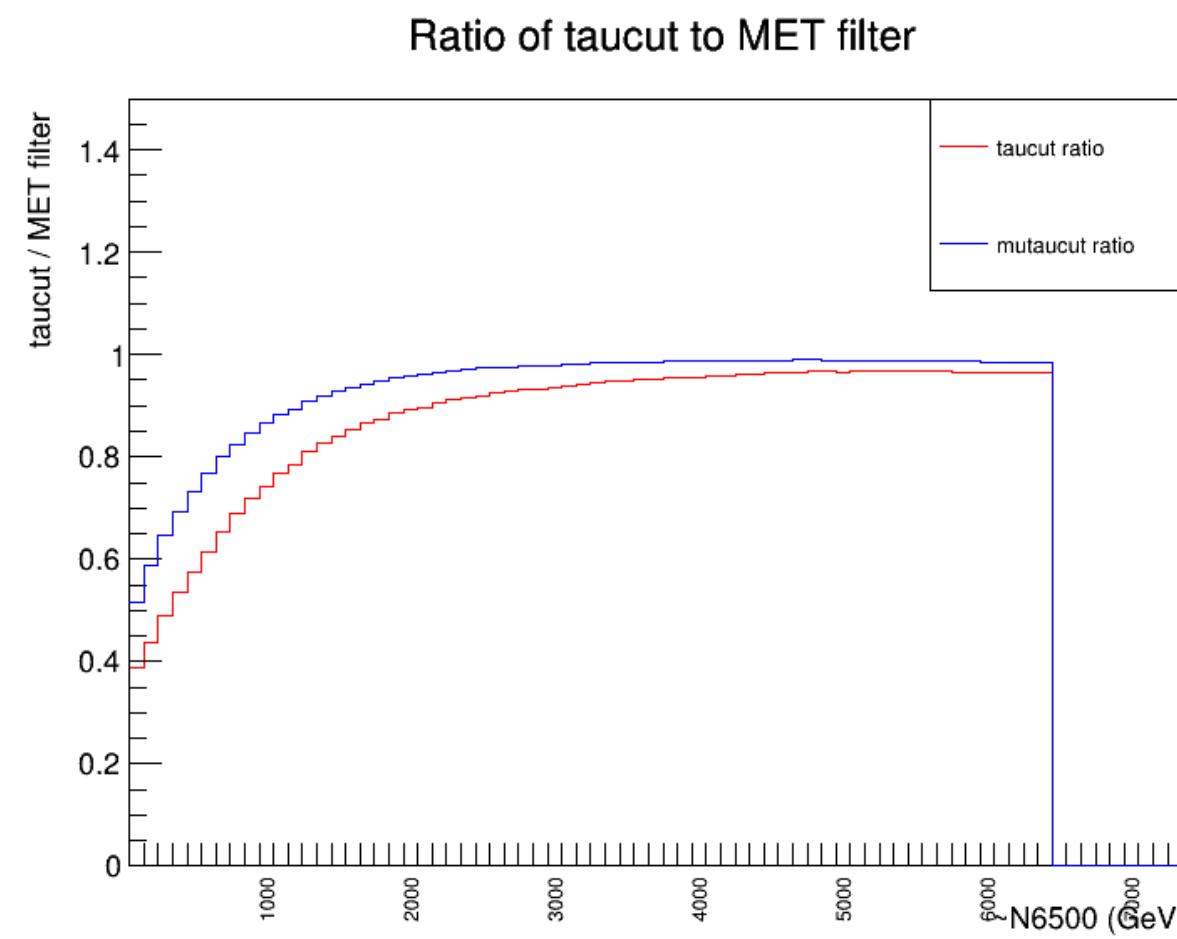
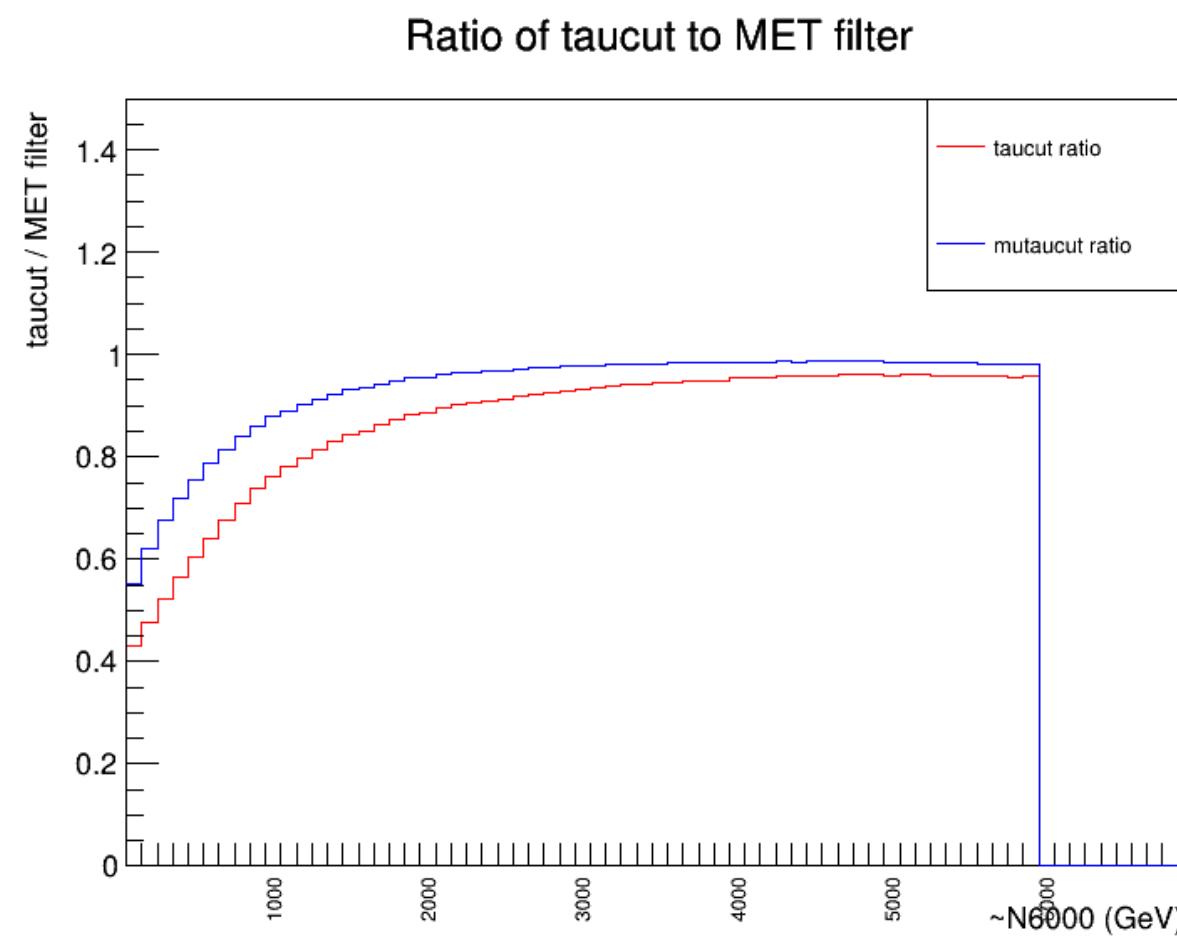
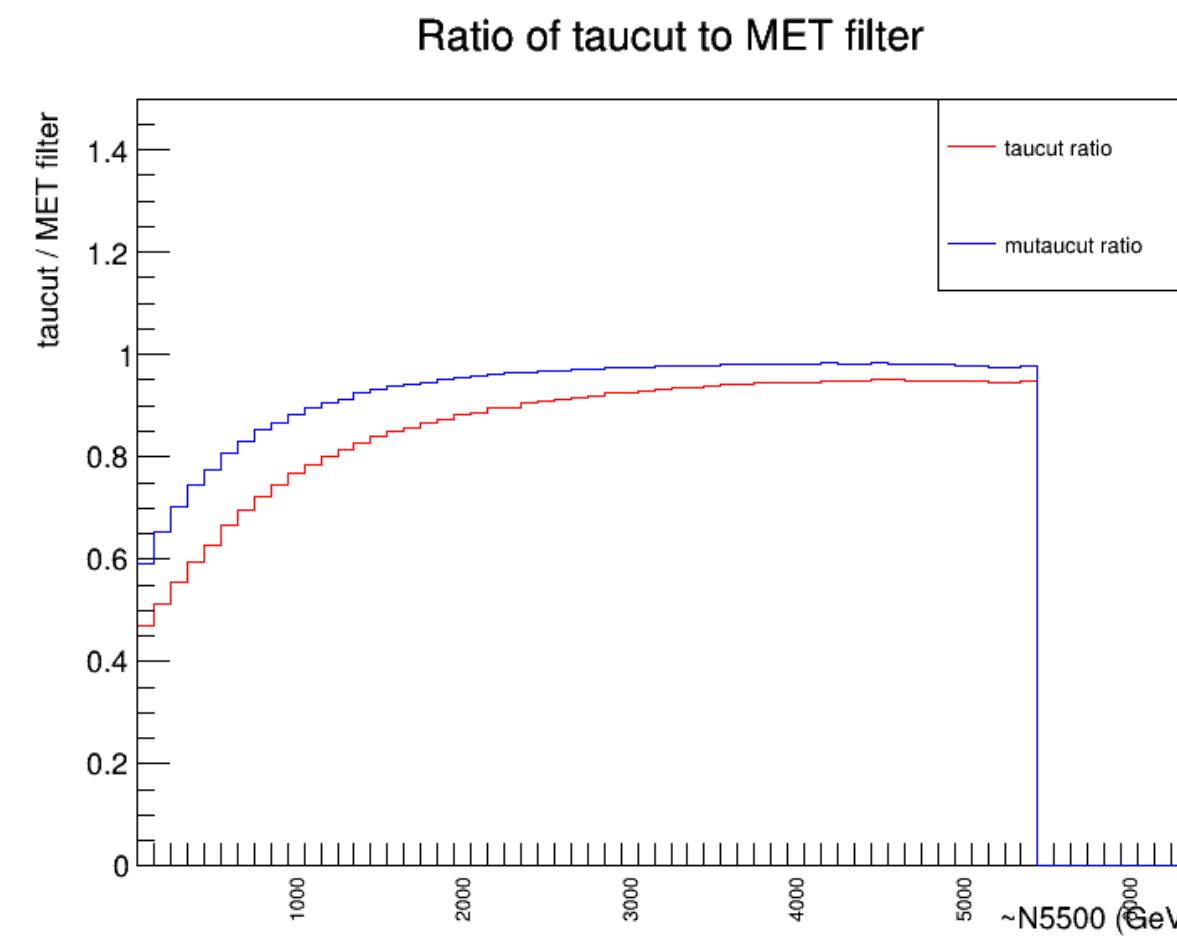
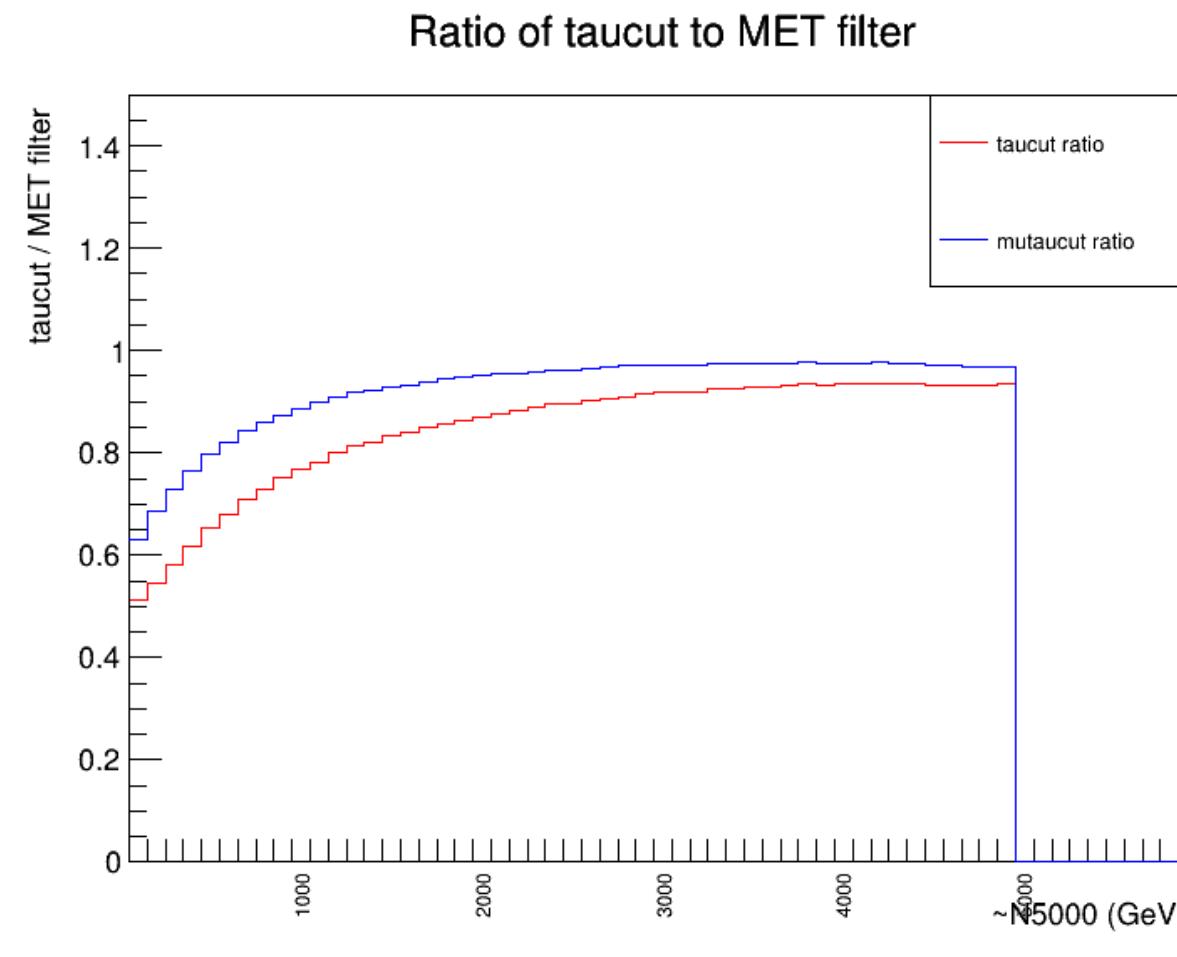
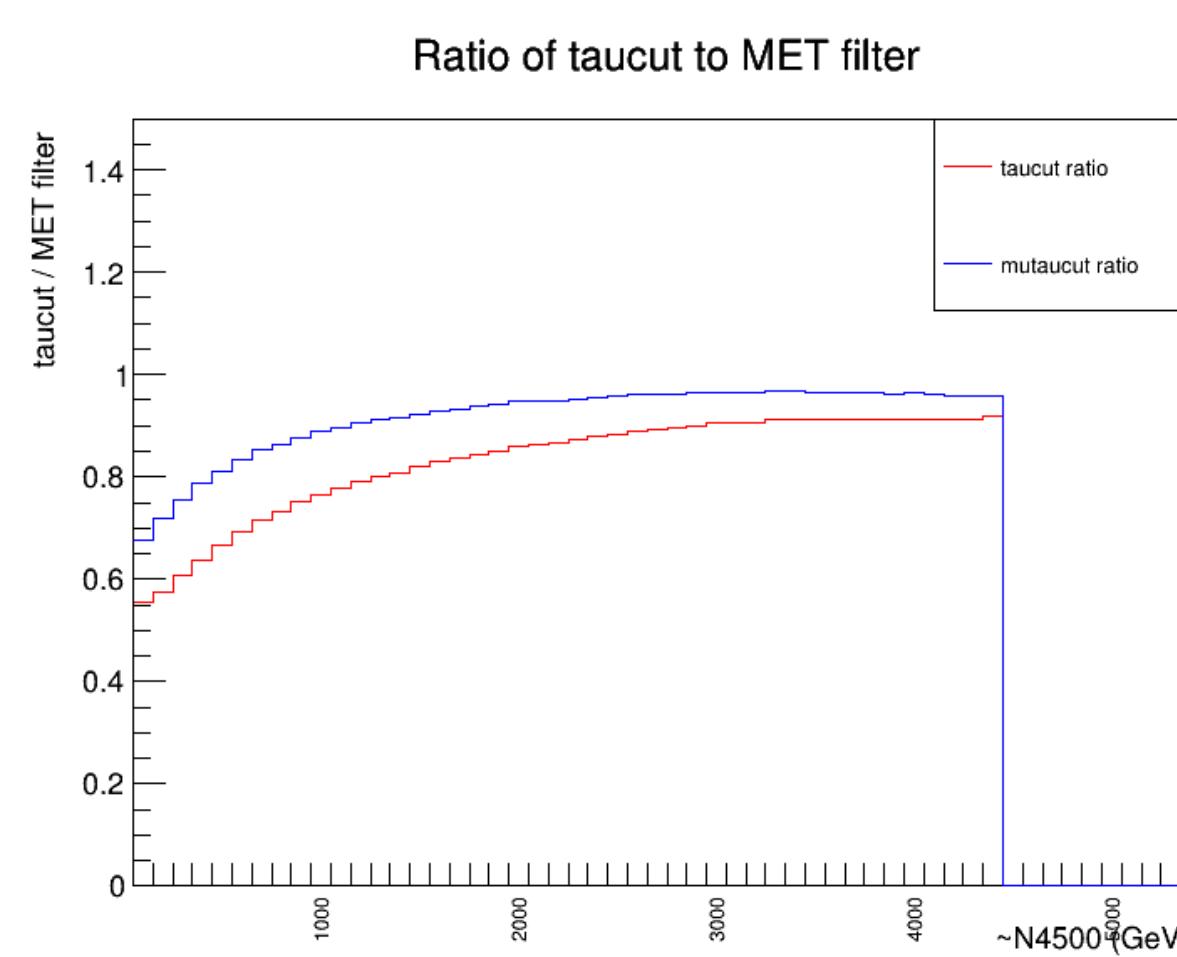
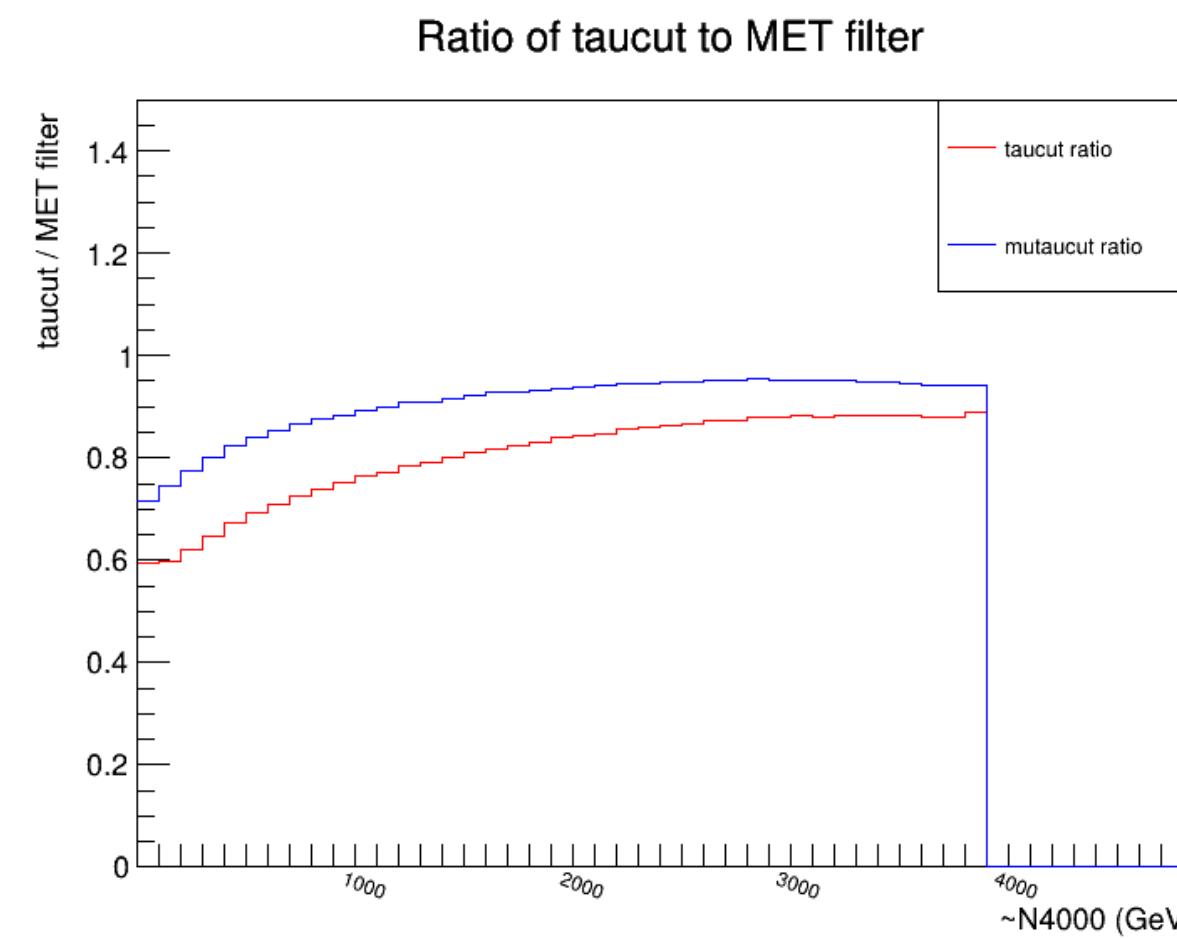
Only trigger &  $\tau$  ID cut &  $P_T$  cut

# $\mu$ or $\tau$ trigger & $\tau$ trigger



- $W_R$  1000 ~ 3500

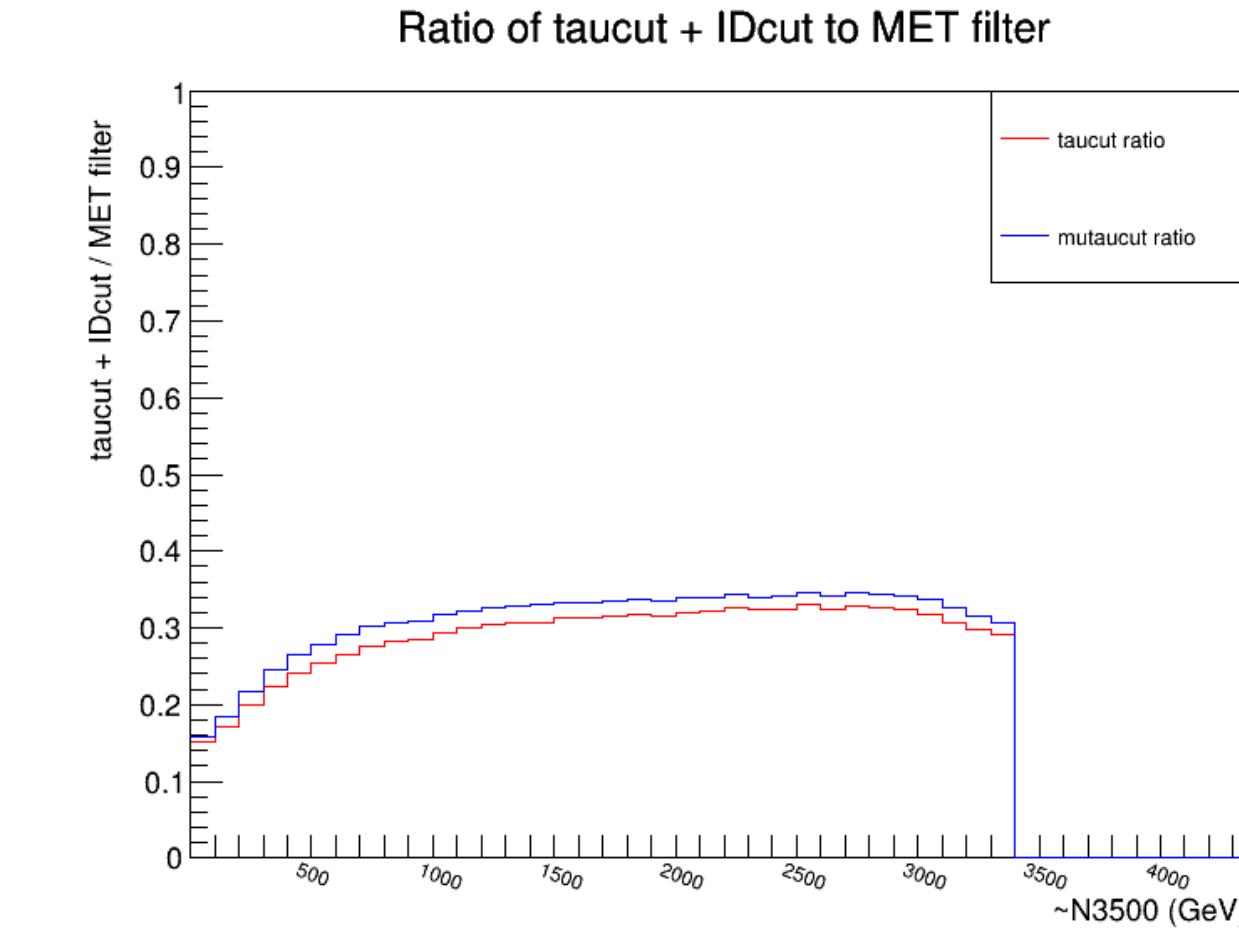
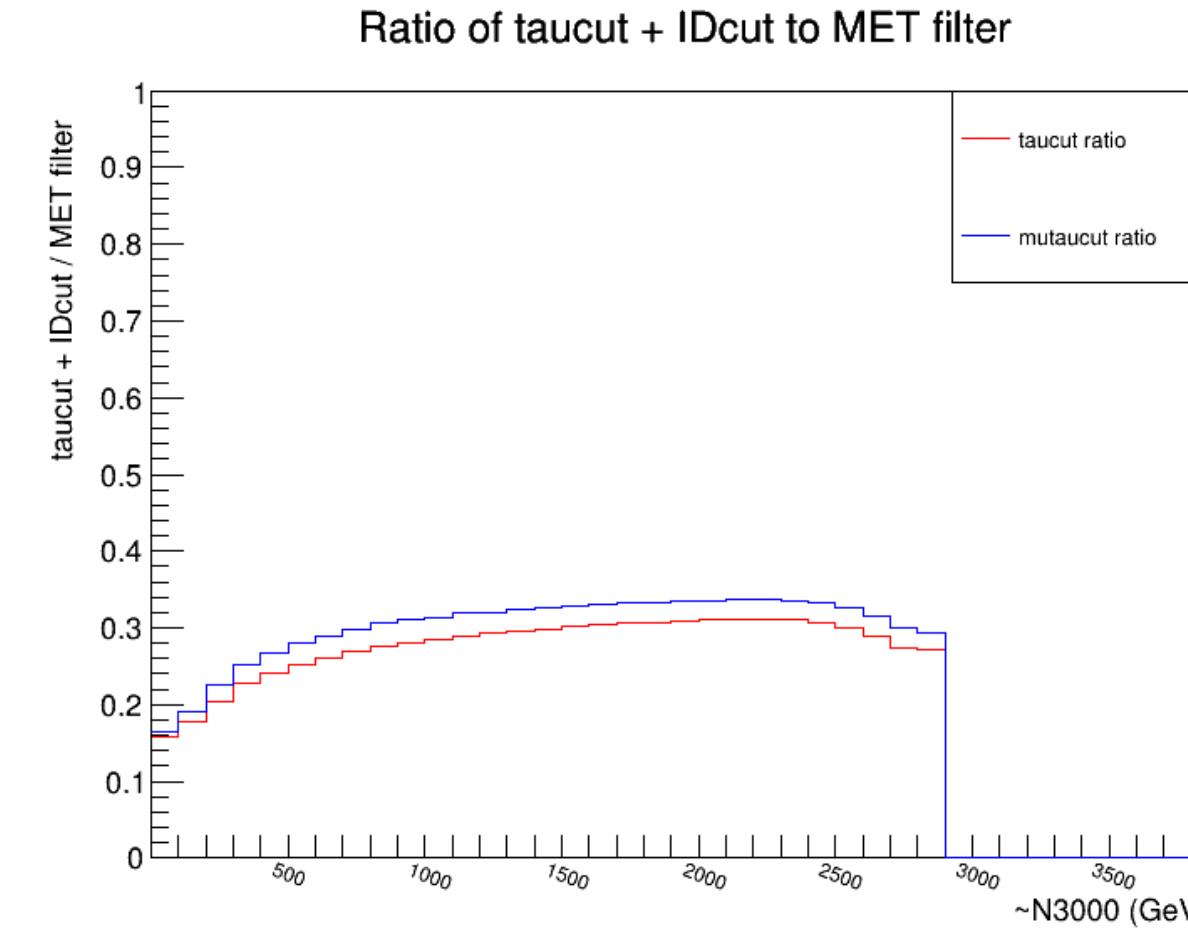
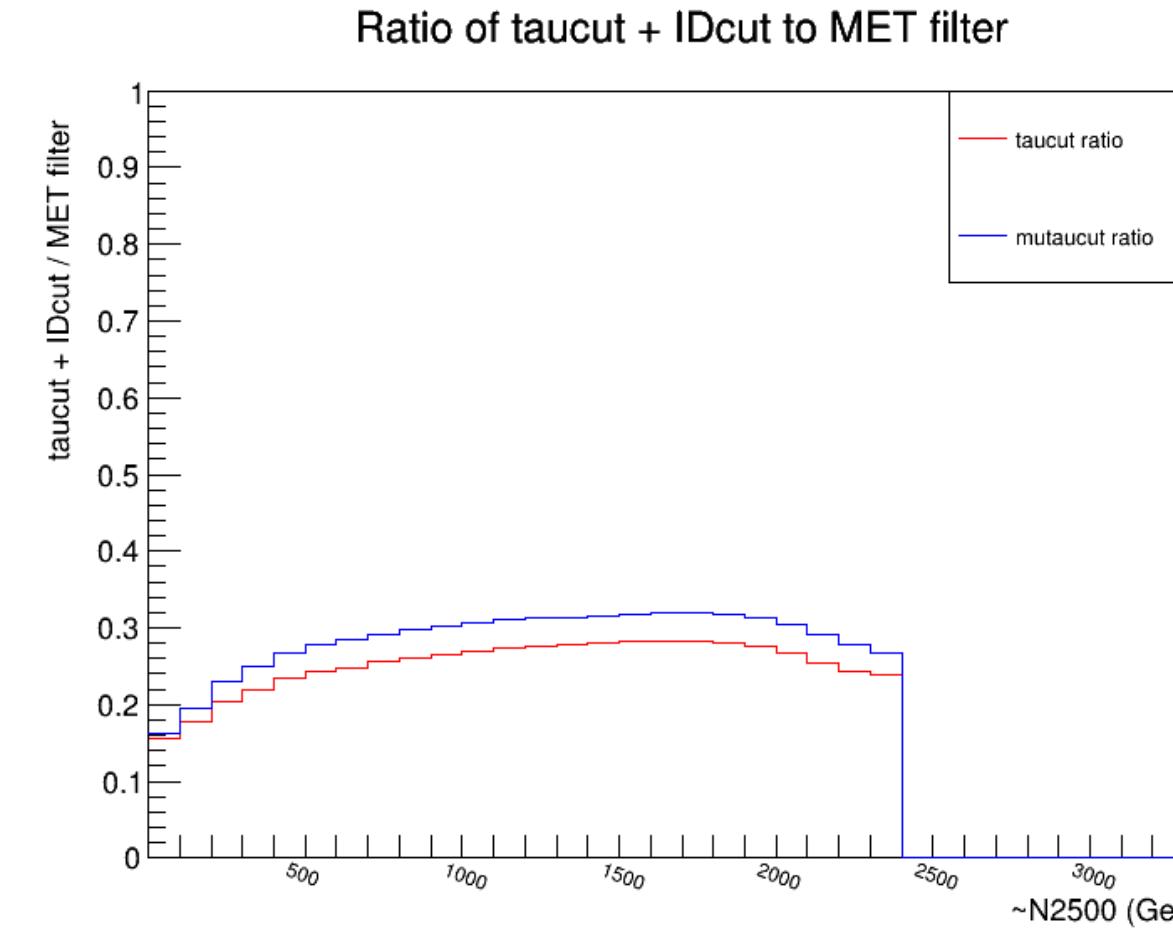
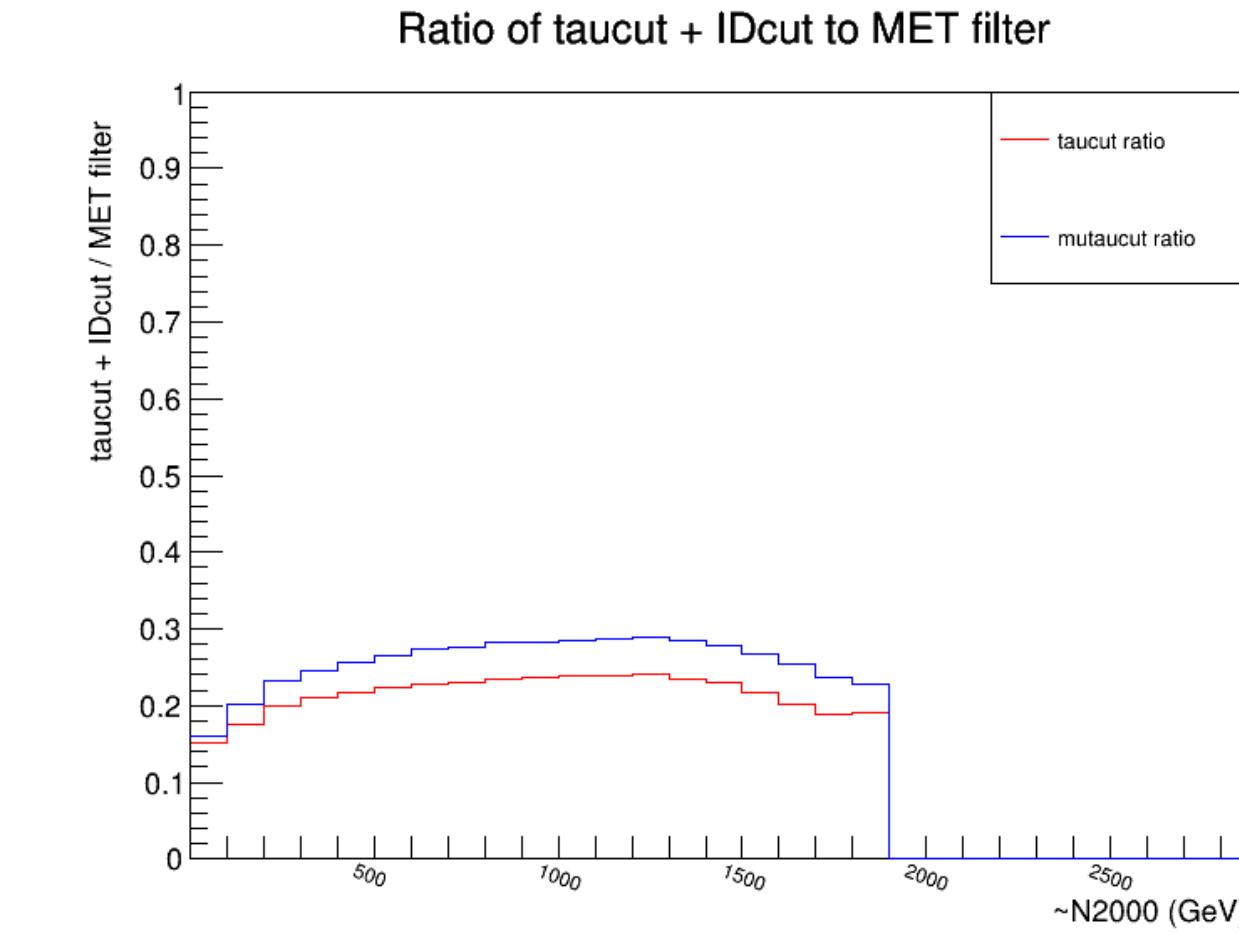
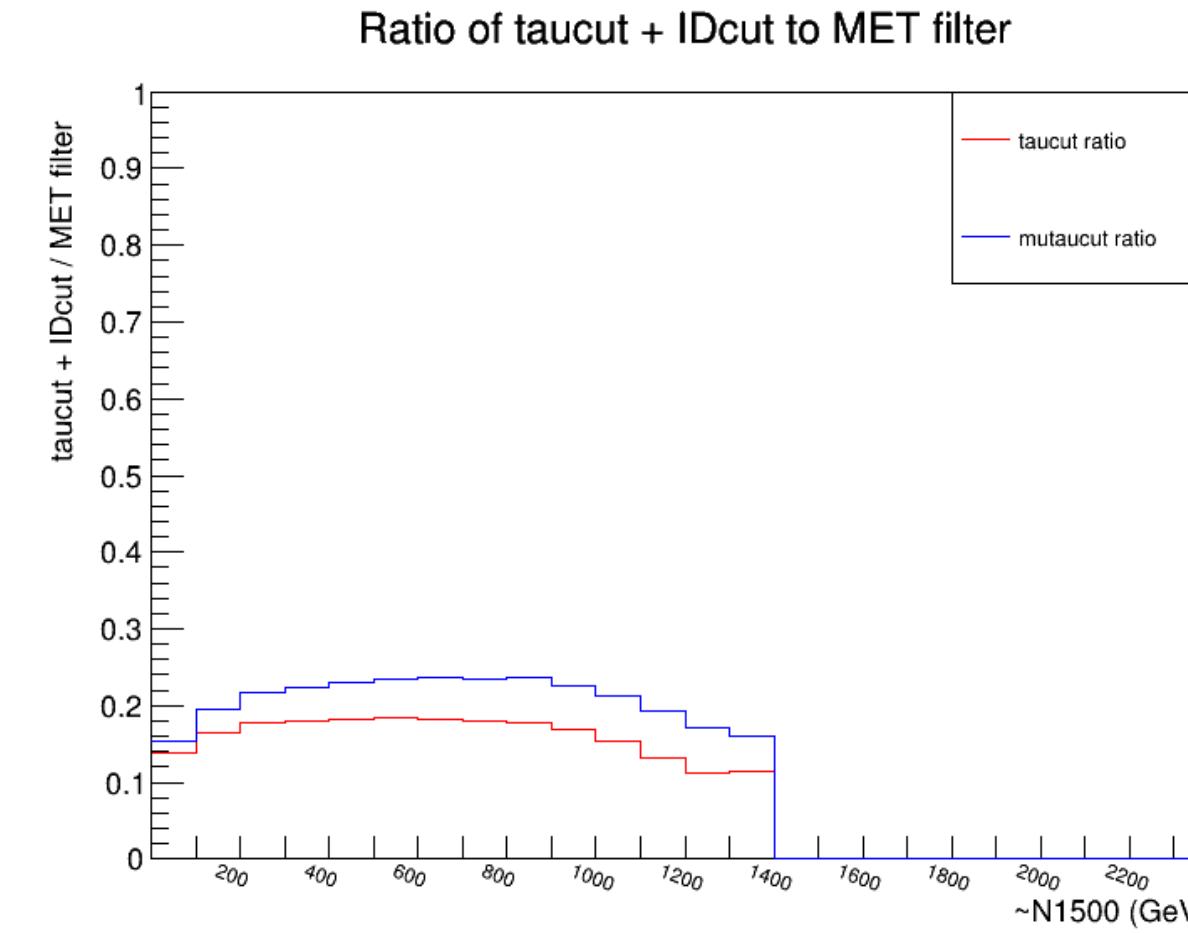
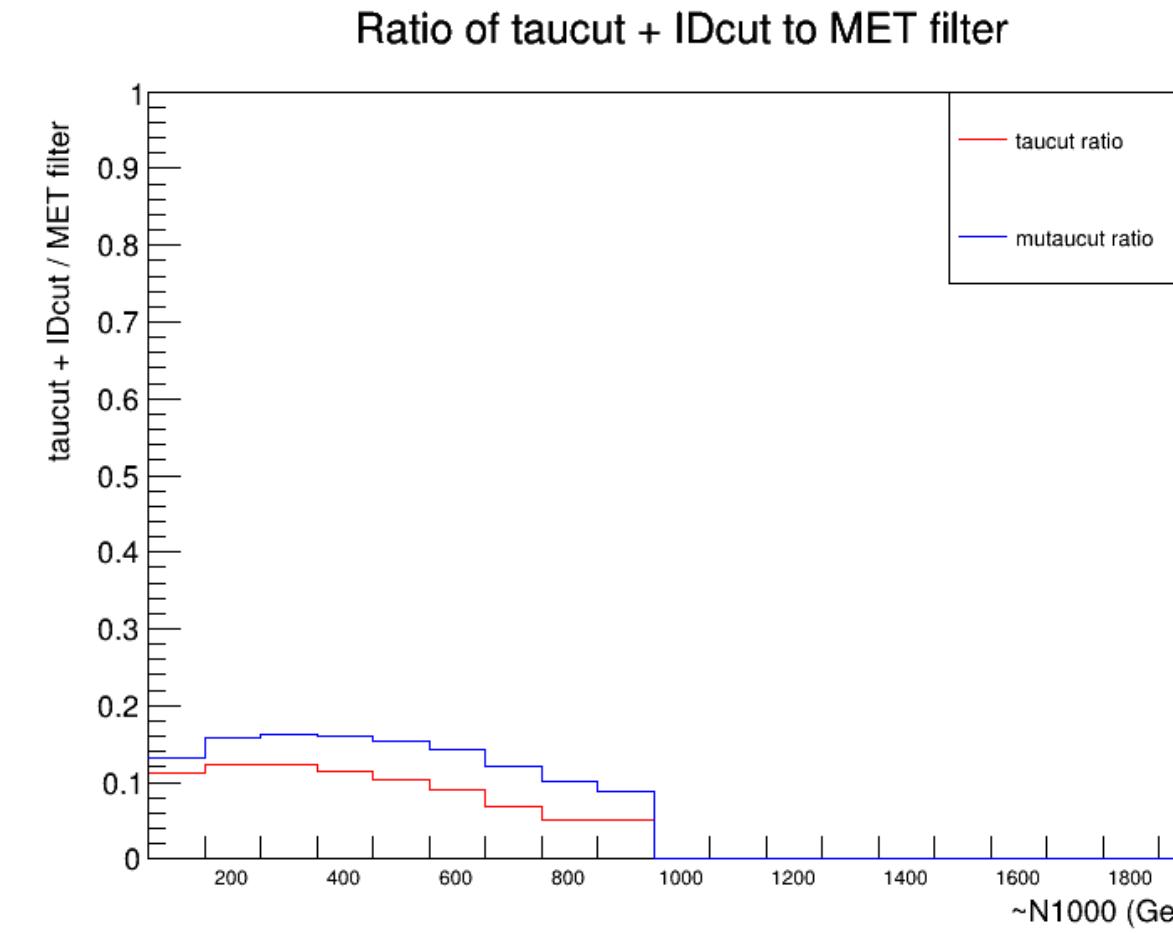
# $\mu$ or $\tau$ trigger & $\tau$ trigger



- $W_R$  4000 ~ 6500

$\tau$  ID

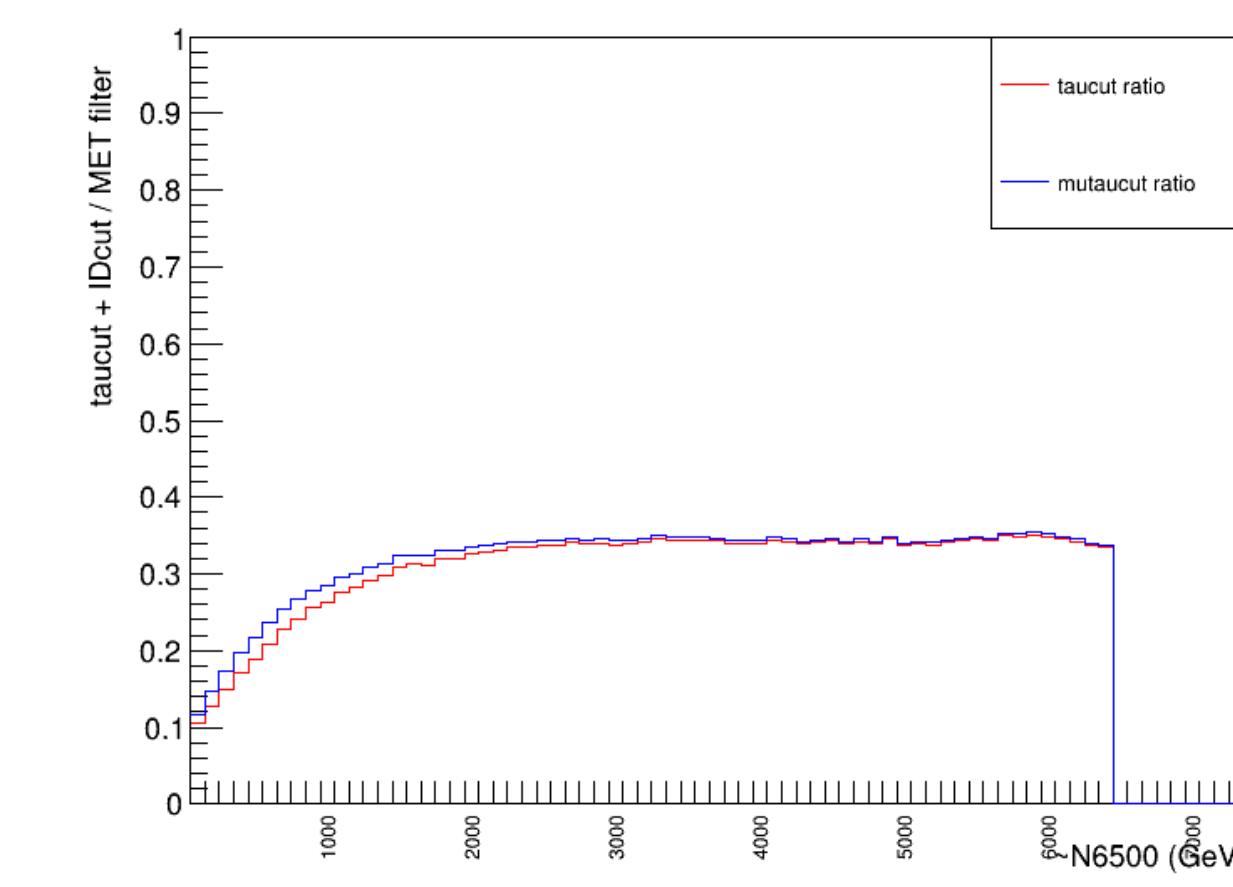
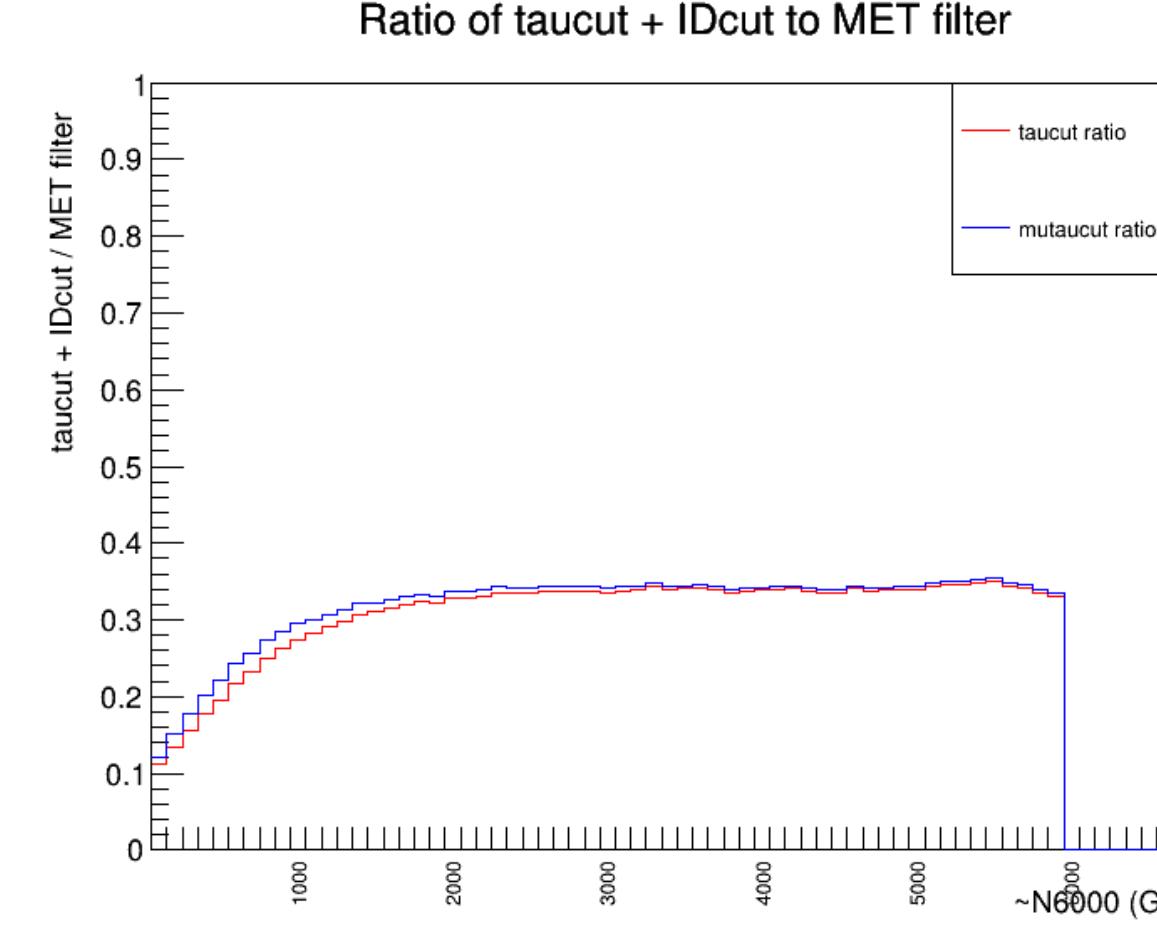
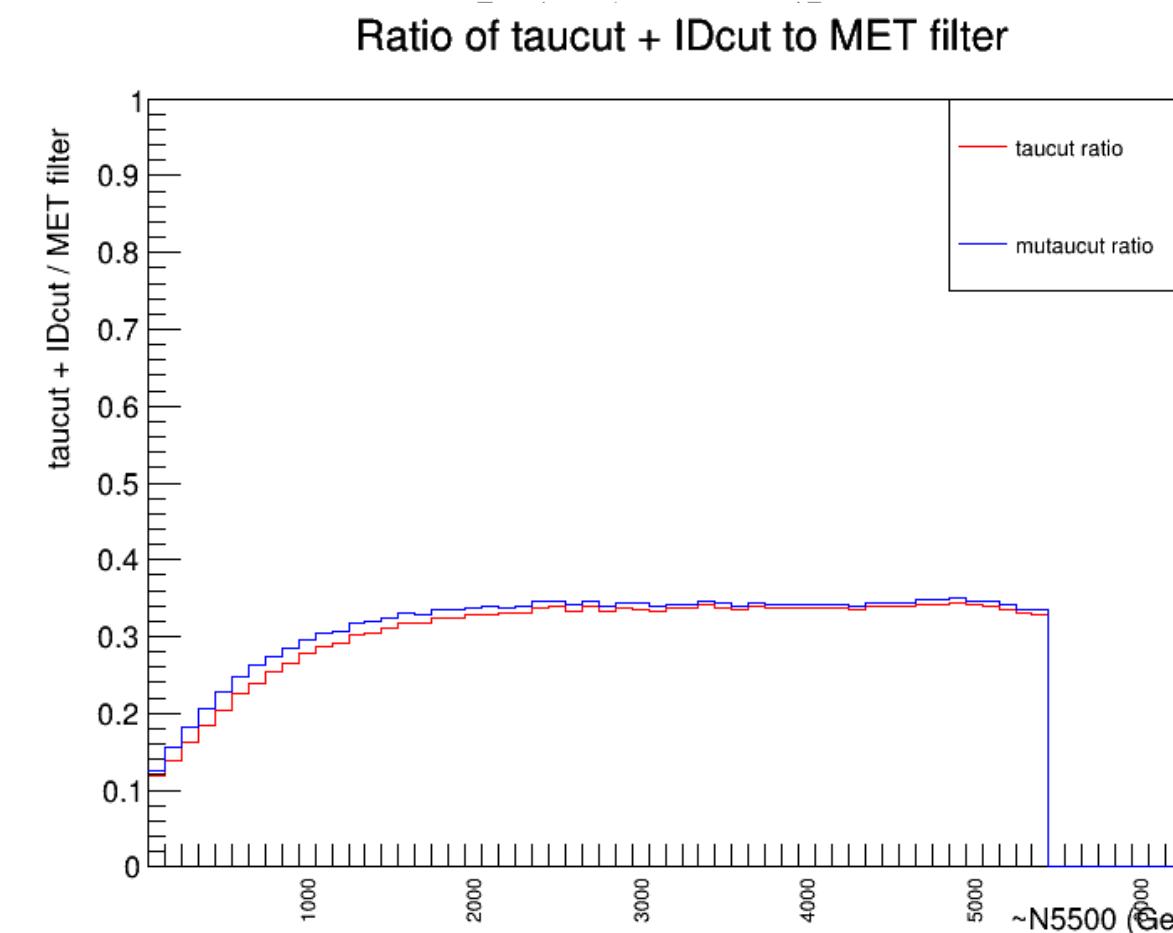
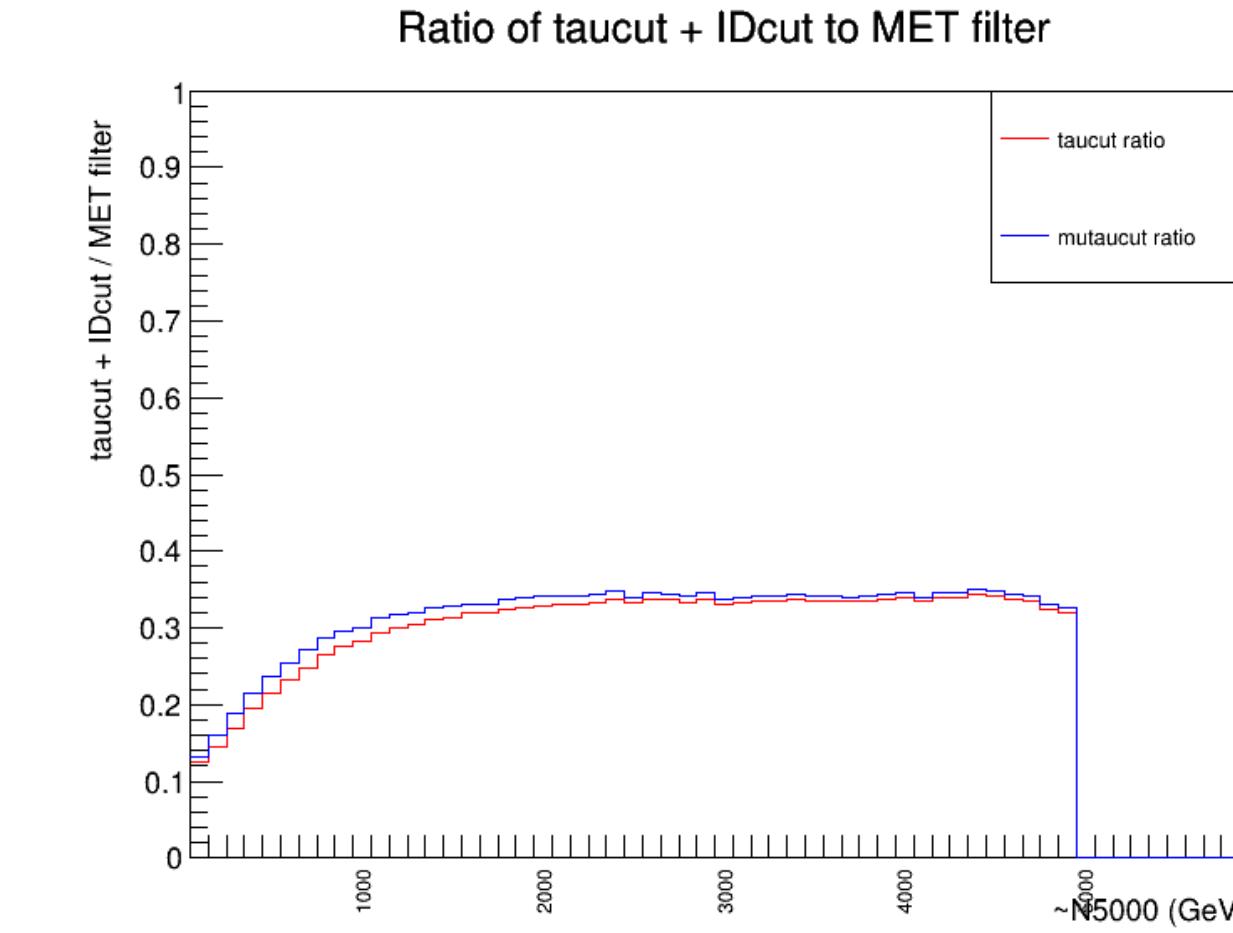
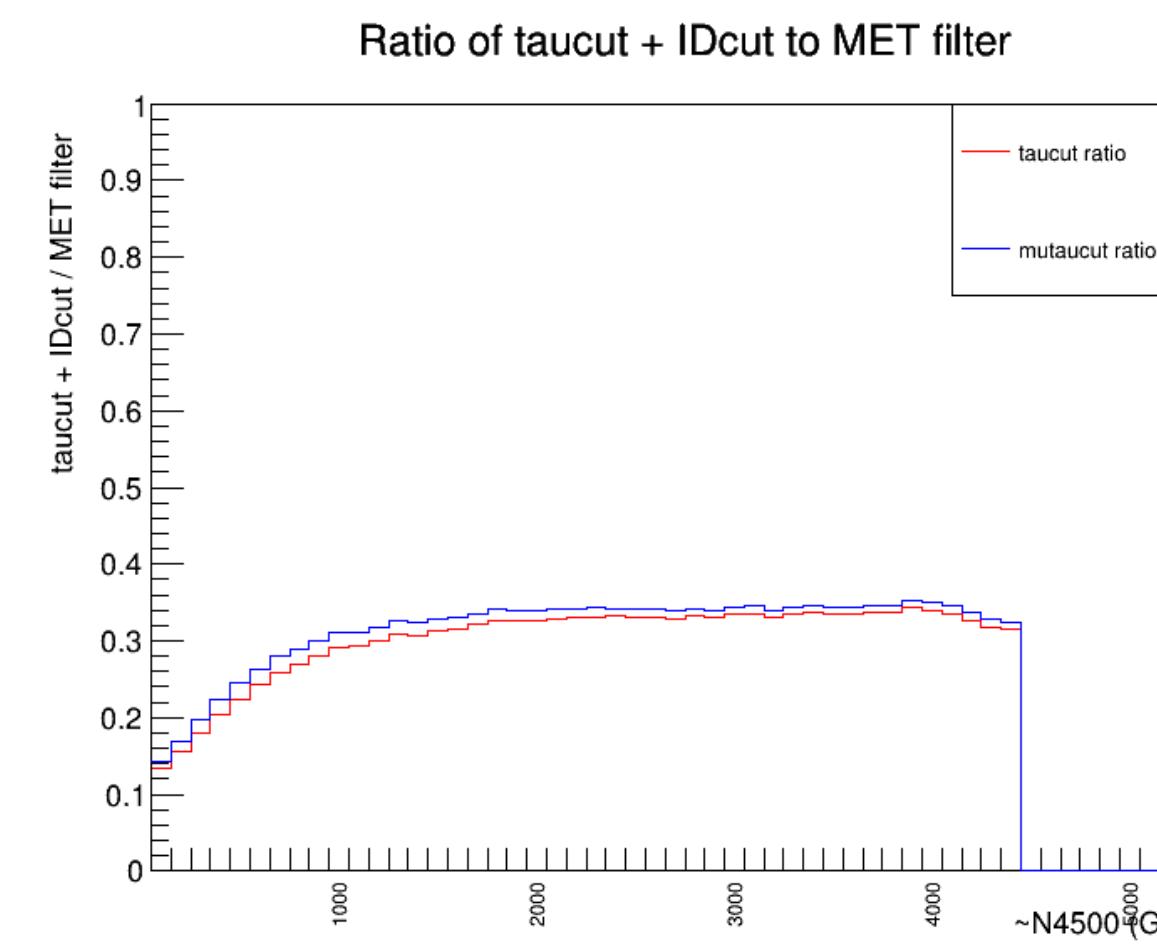
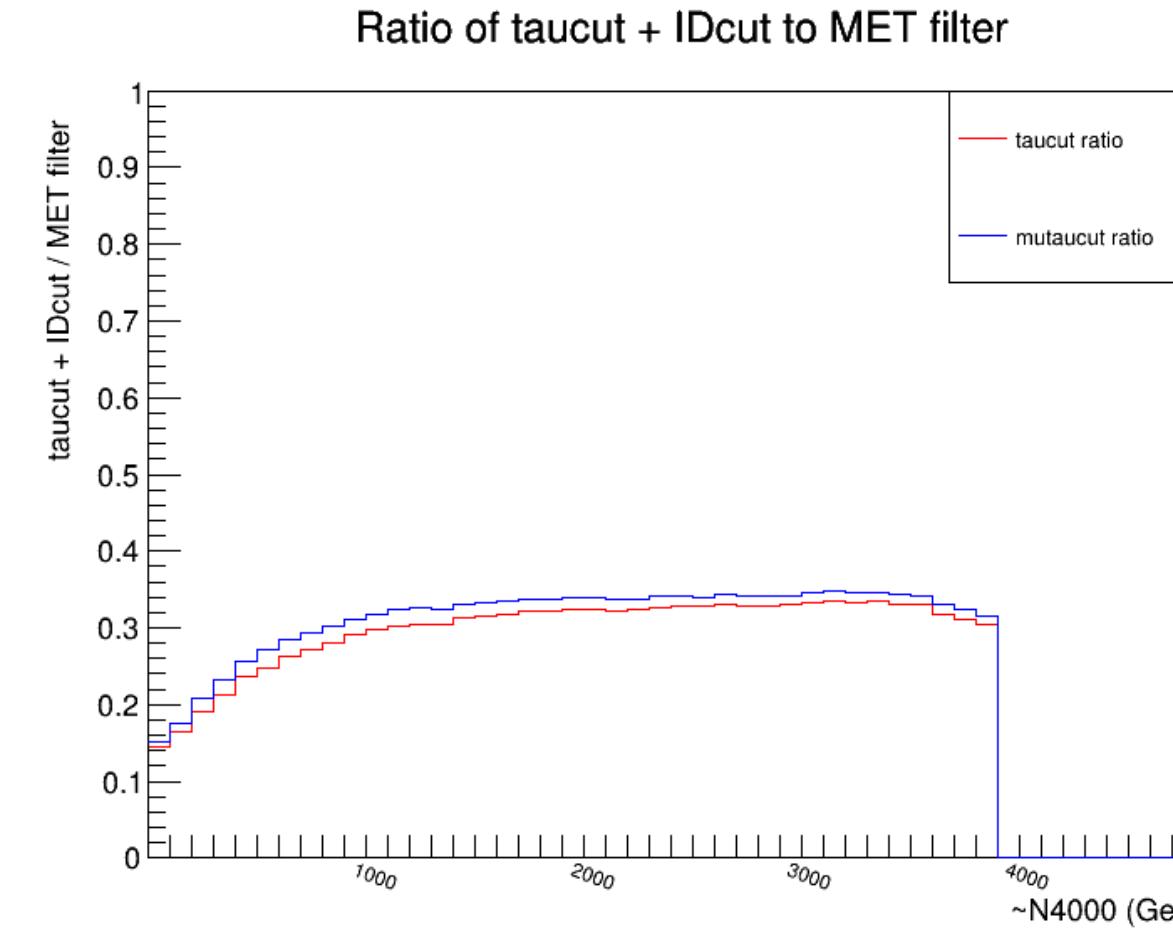
( $\tau^{\text{ID}} + \tau^{\text{trigger}} + \text{MET filter}$ ) / MET filter  
 ( $\tau^{\text{ID}} + \tau^{\text{trigger or } \mu^{\text{trigger}}} + \text{MET filter}$ ) / MET filter



- $W_R$  1000 ~ 3500

$\tau$  ID

( $\tau^{\text{ID}} + \tau^{\text{trigger}} + \text{MET filter}$ ) / MET filter  
 ( $\tau^{\text{ID}} + \tau^{\text{trigger or } \mu^{\text{trigger}}} + \text{MET filter}$ ) / MET filter

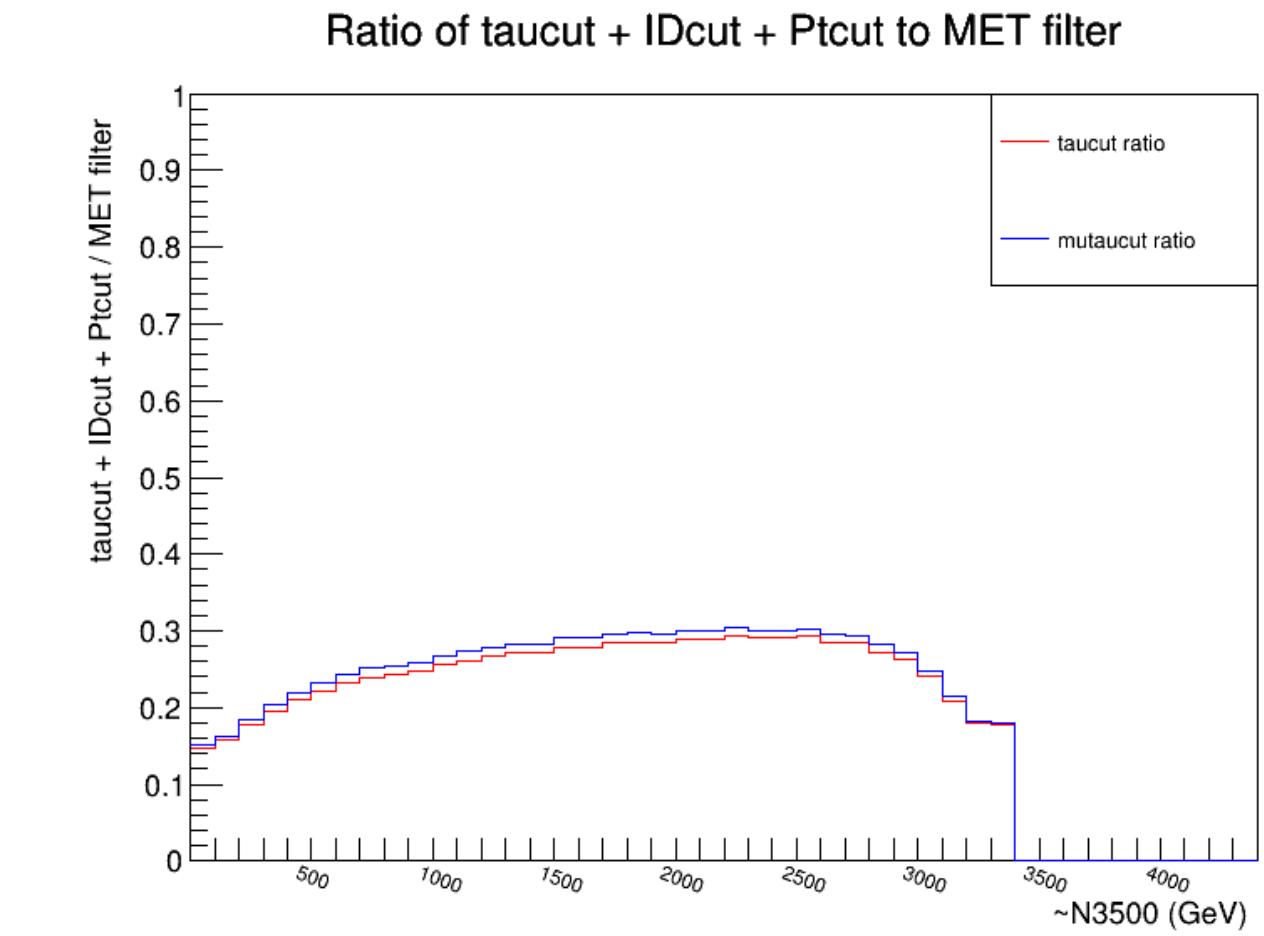
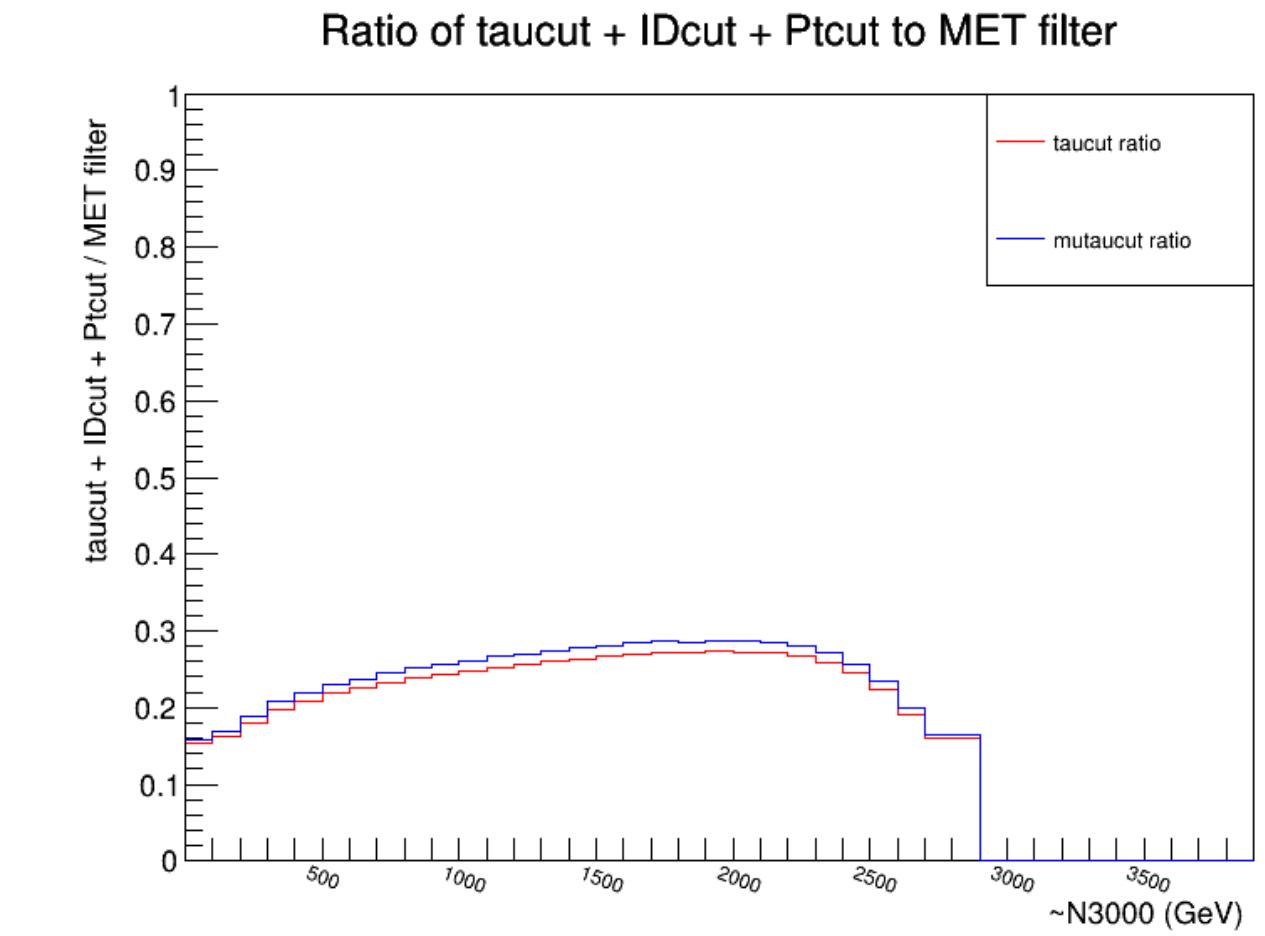
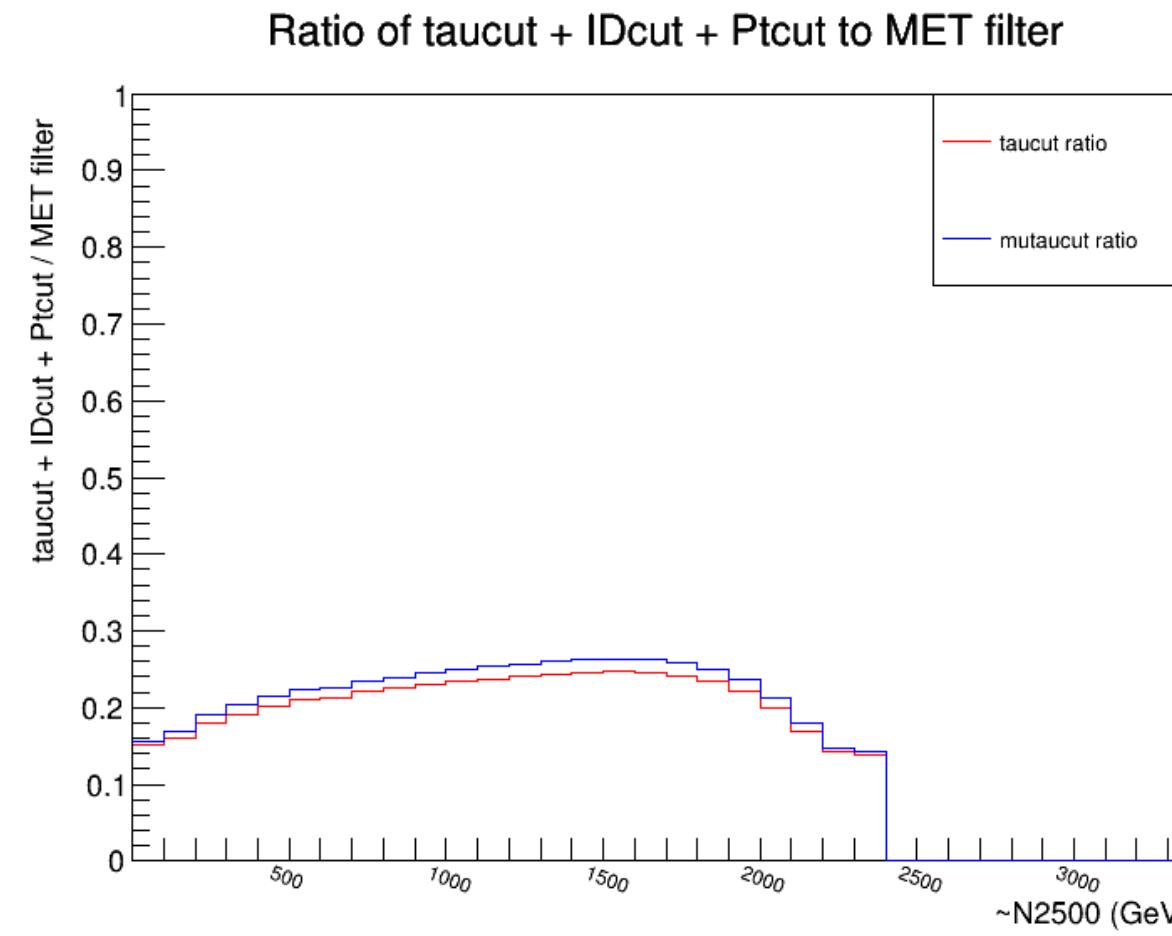
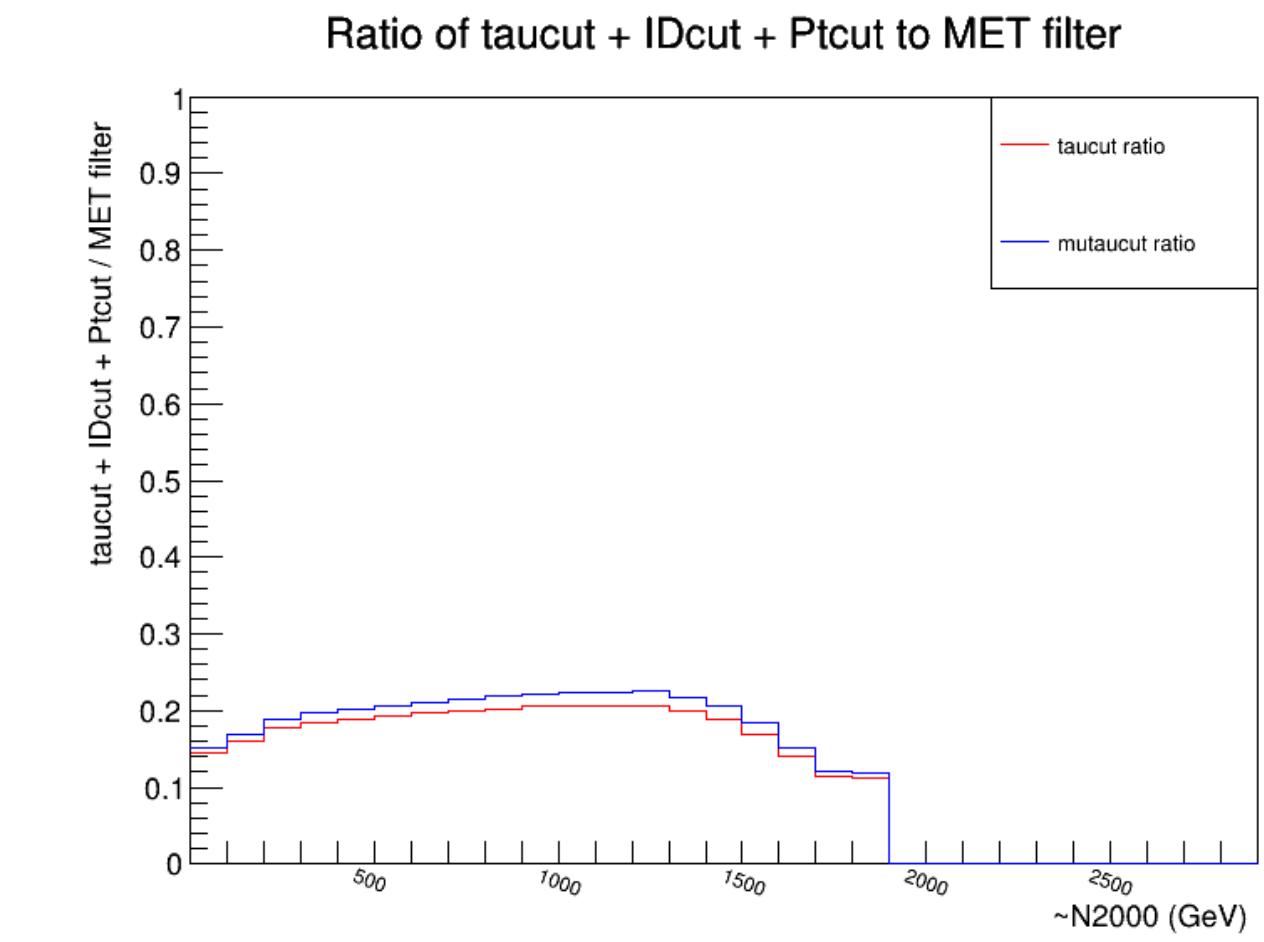
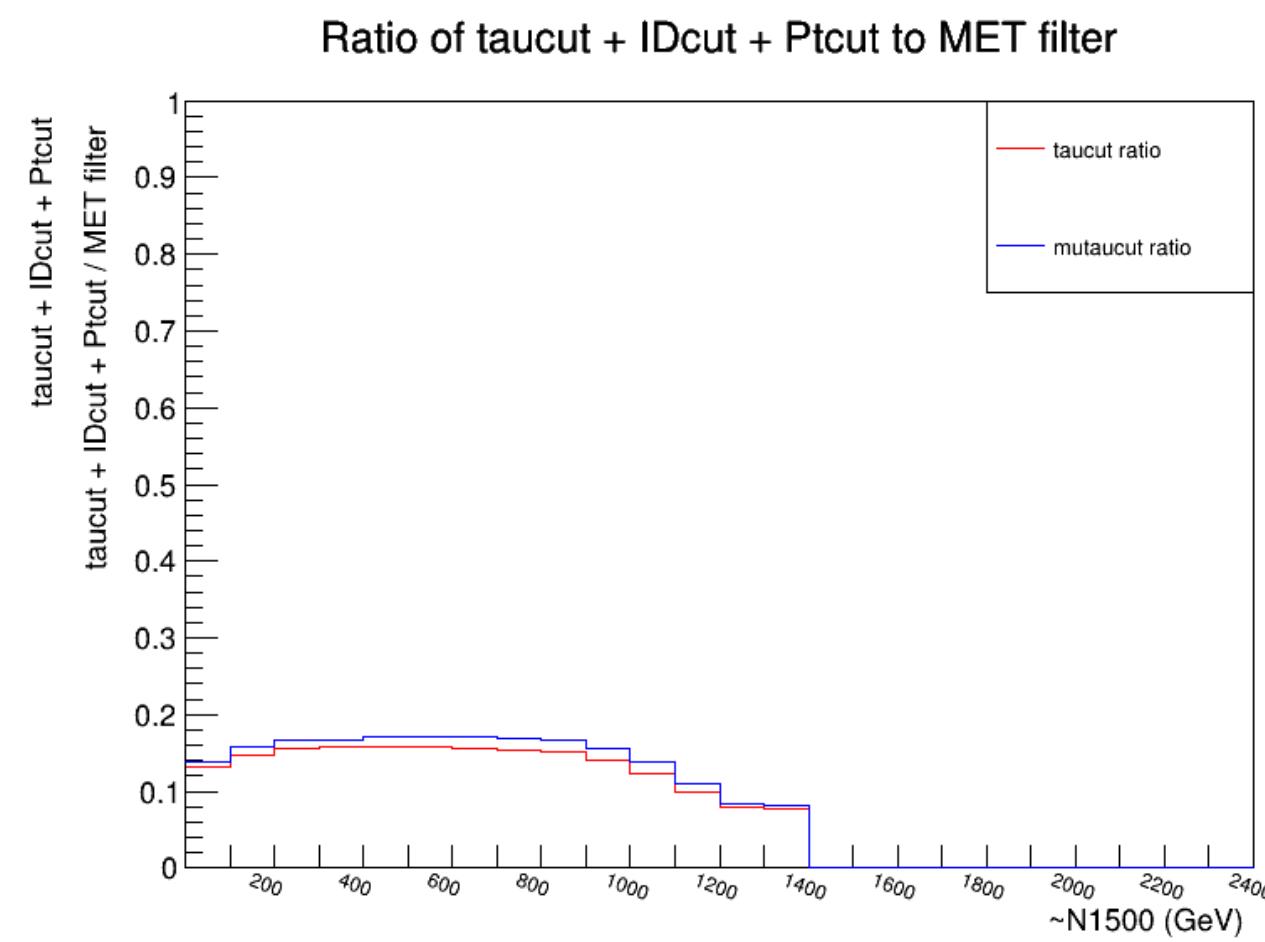
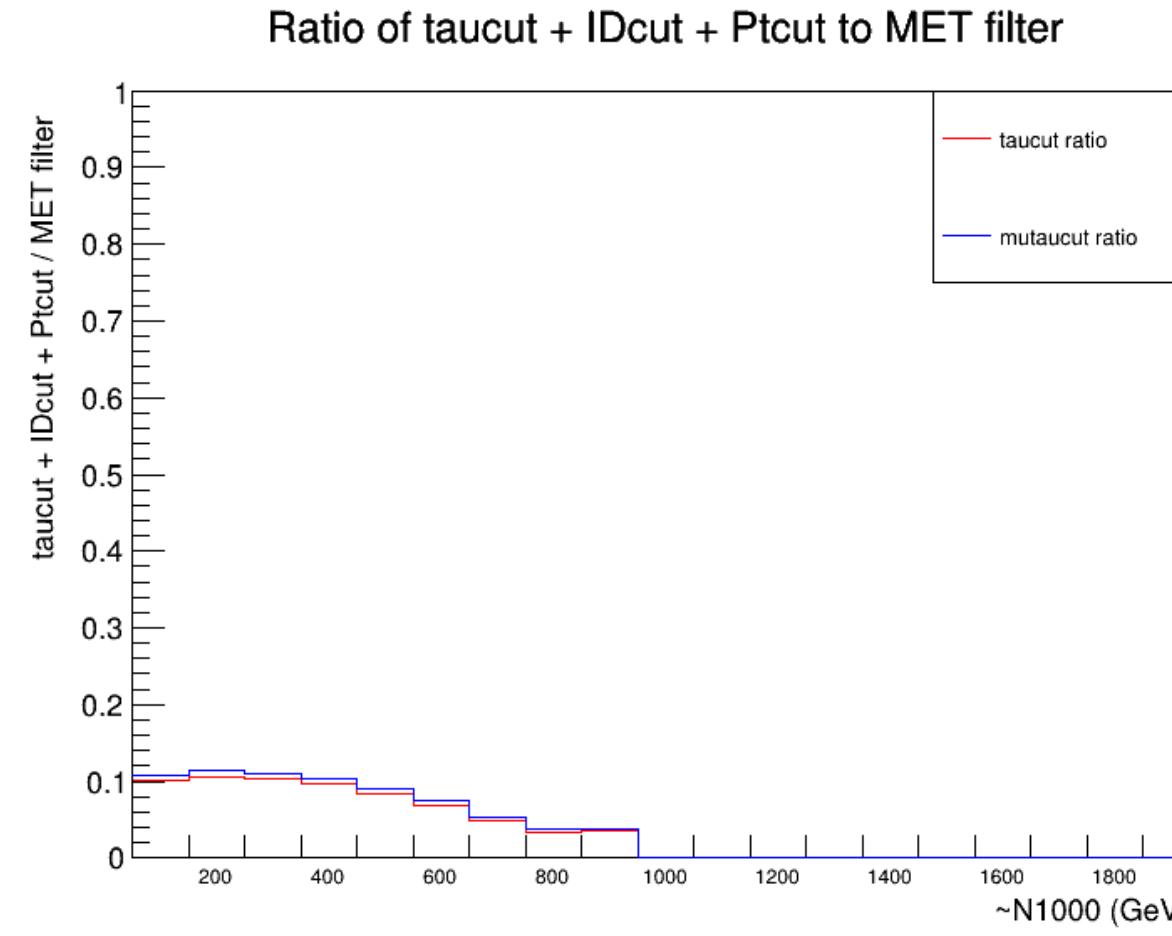


- $W_R$  4000~6500

**P<sub>T</sub>**

( $P_T + \tau^{\text{ID}} + \tau^{\text{trigger}} + \text{MET filter}$ ) / MET filter

( $P_T + \tau^{\text{ID}} + \tau^{\text{trigger or } \mu^{\text{trigger}}} + \text{MET filter}$ ) / MET filter

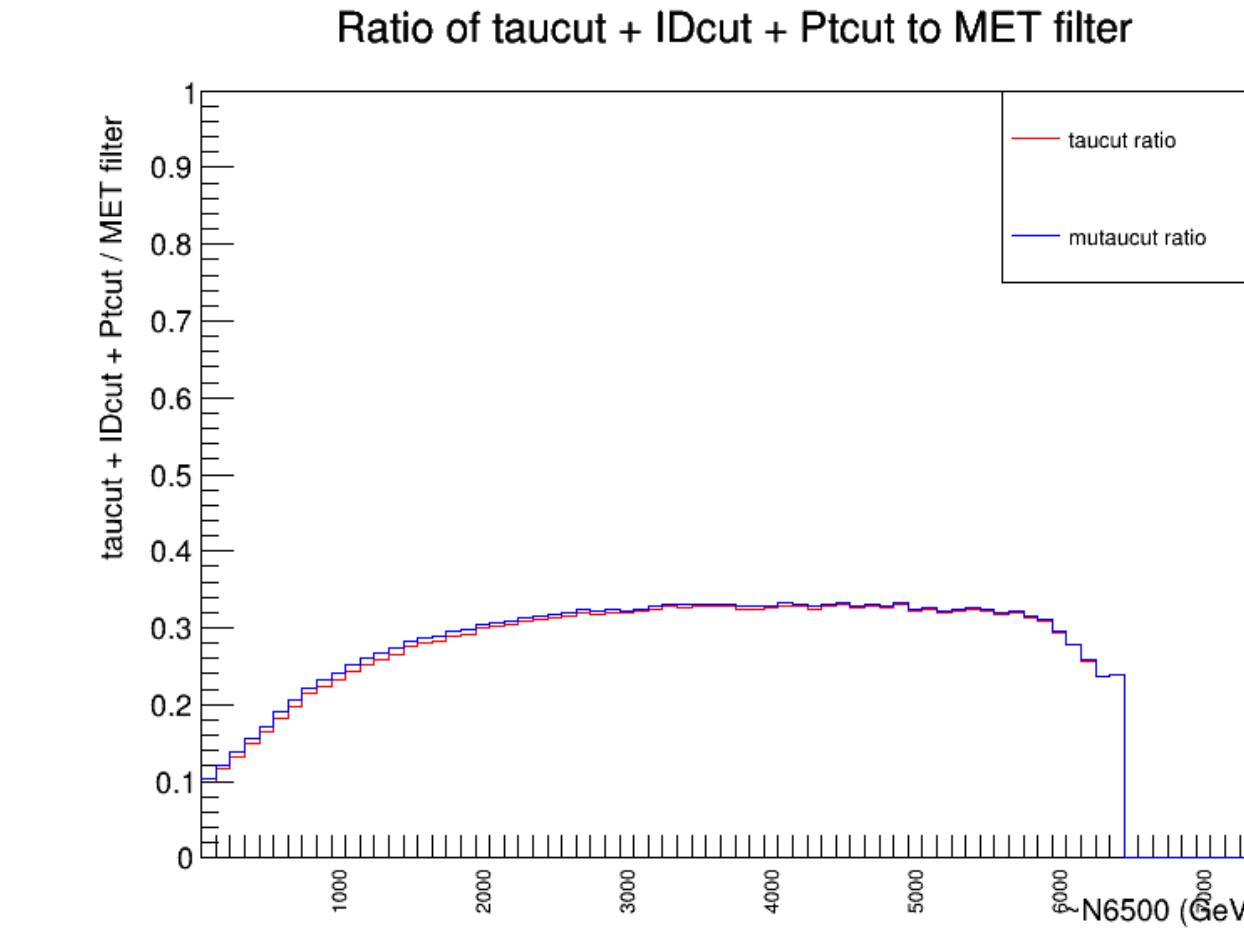
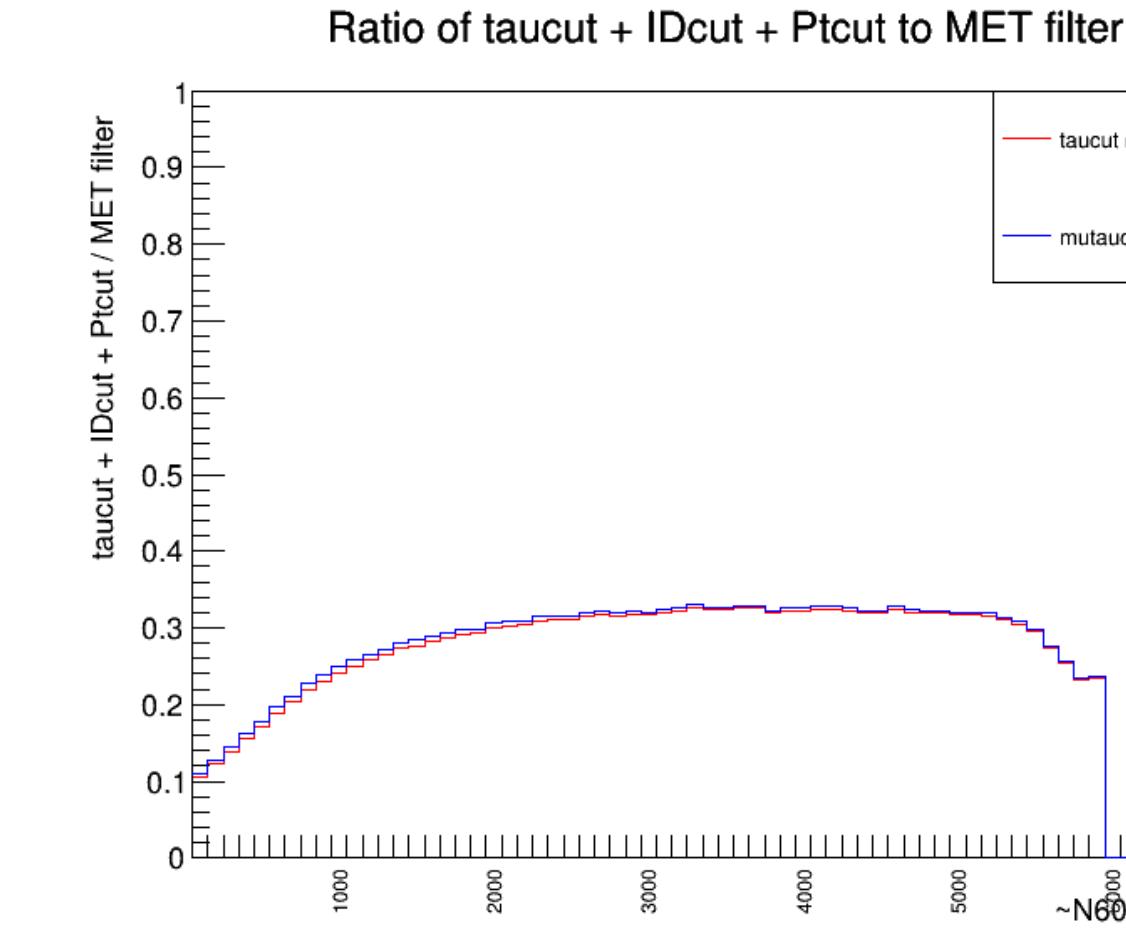
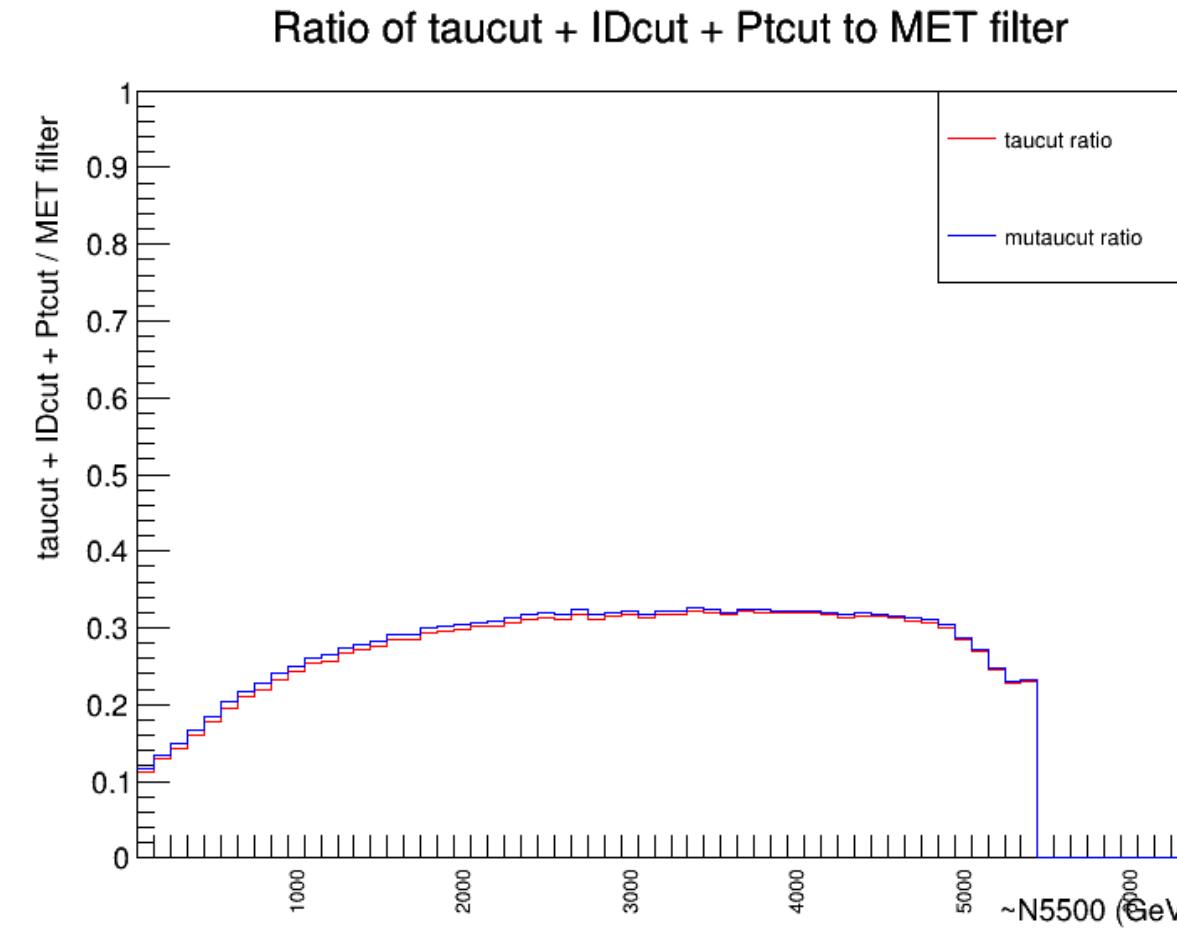
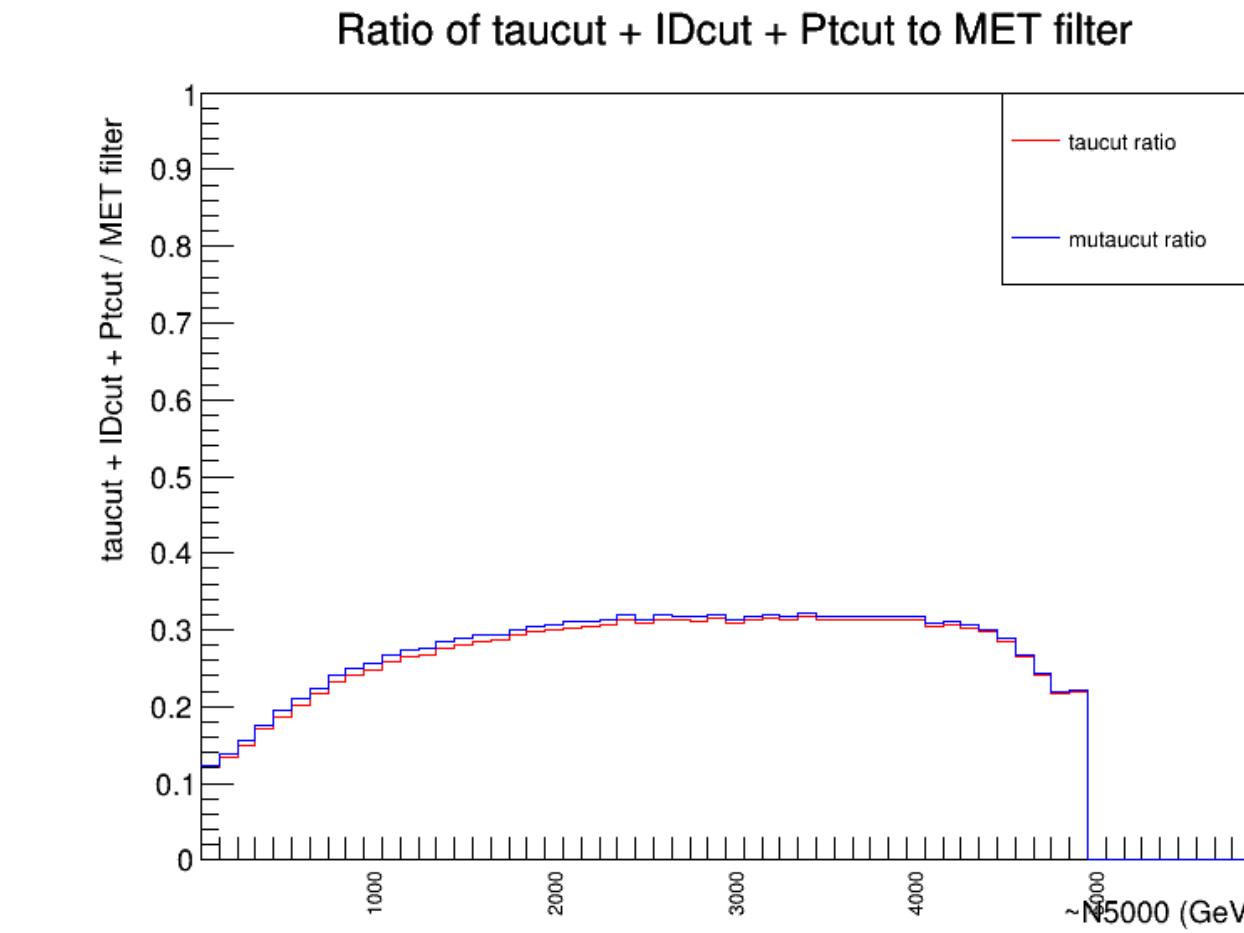
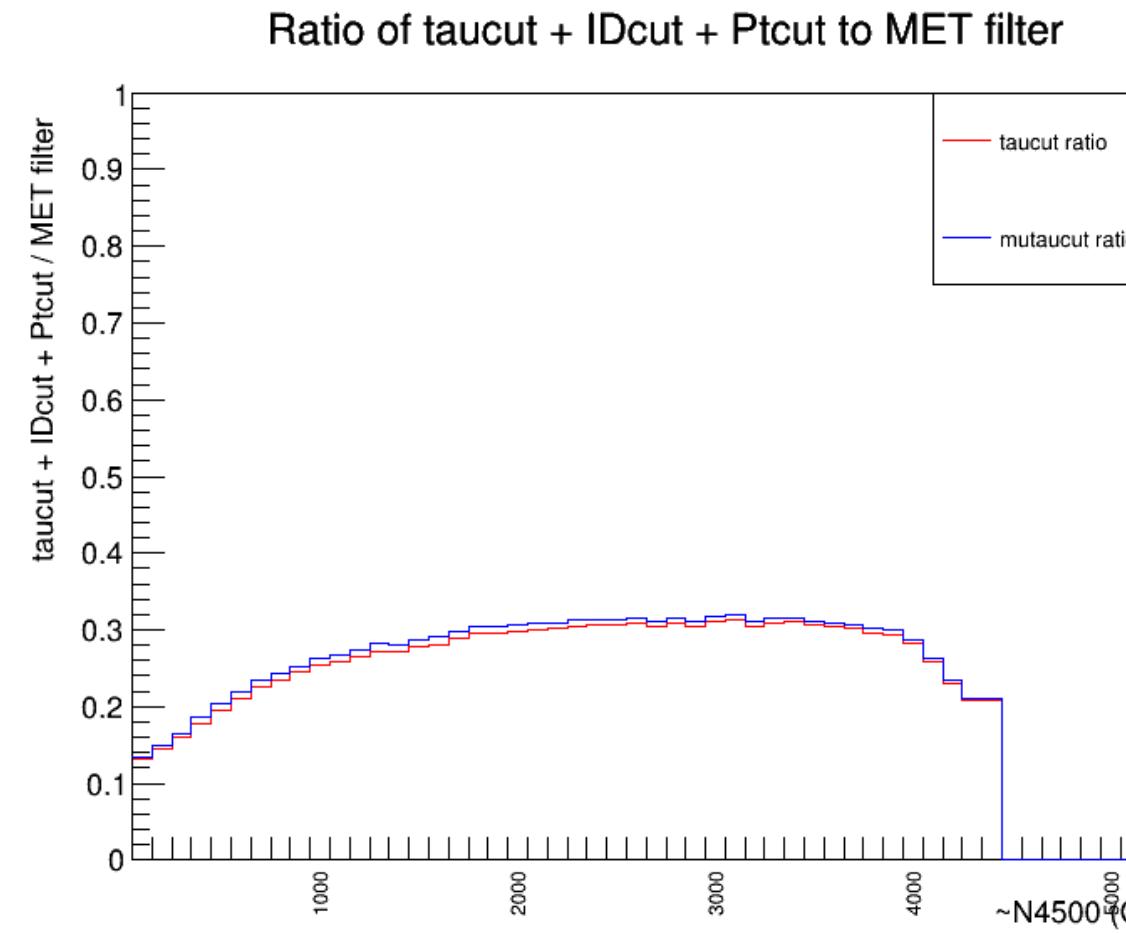
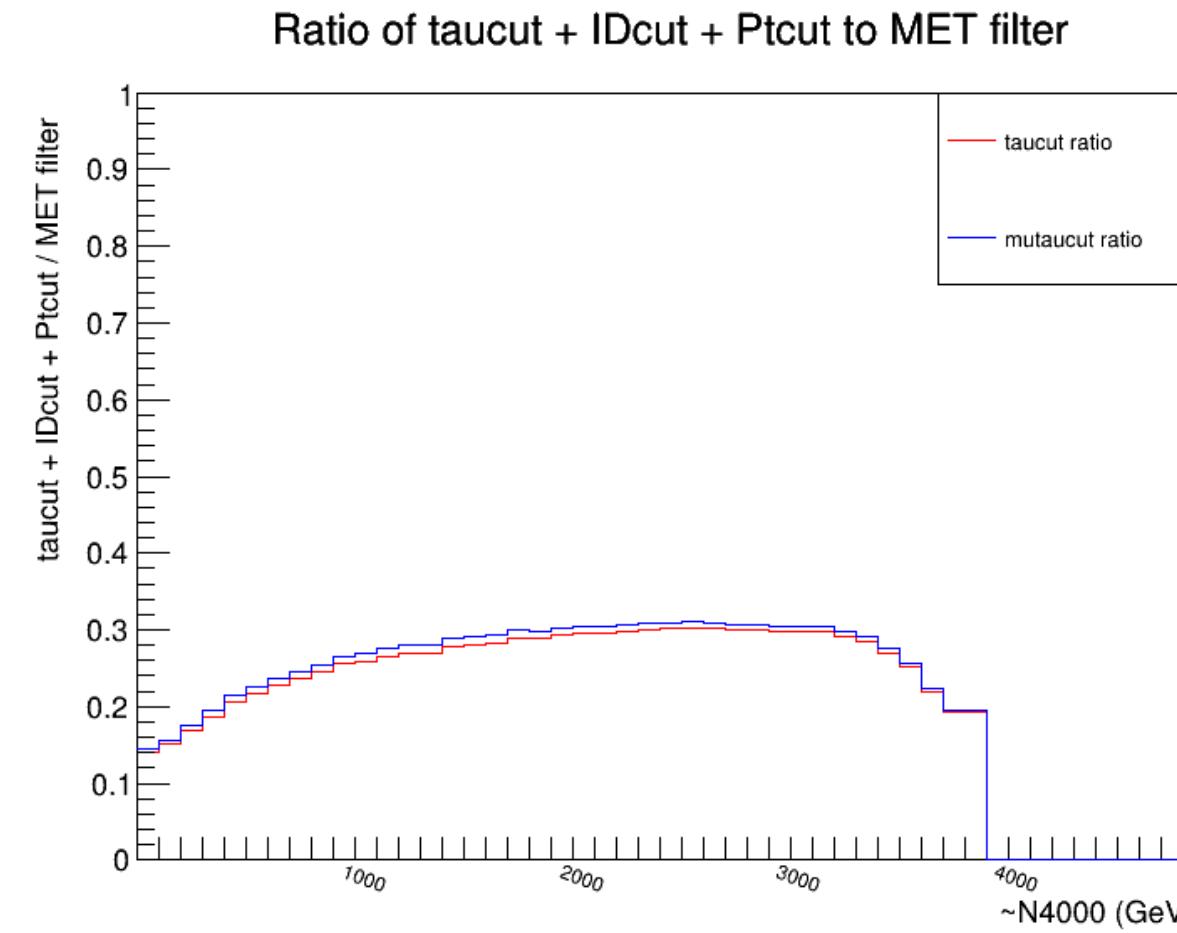


- $W_R$  1000 ~ 3500

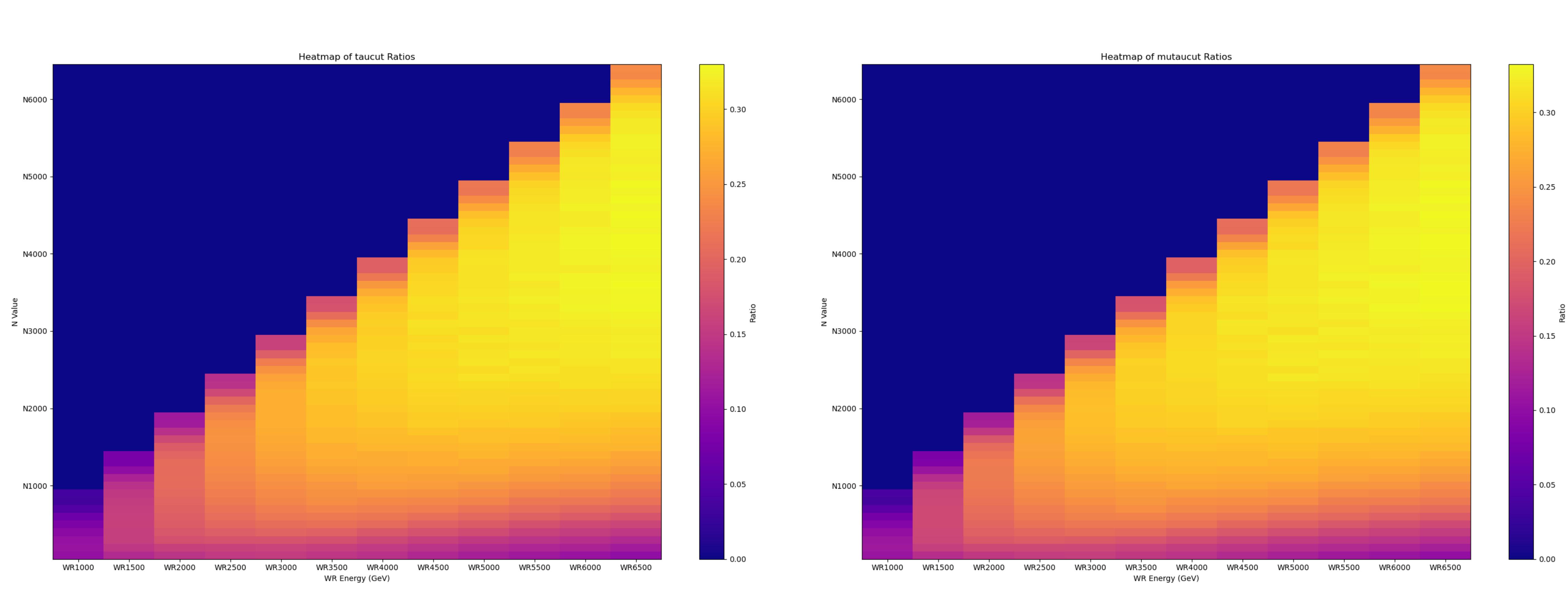
$P_T$

$(P_T + \tau^{\text{ID}} + \tau^{\text{trigger}} + \text{MET filter}) / \text{MET filter}$

$(P_T + \tau^{\text{ID}} + \tau^{\text{trigger or } \mu^{\text{trigger}}} + \text{MET filter}) / \text{MET filter}$



- $W_R$  4000~6500



$$(P_T + \tau^{\text{ID}} + \tau^{\text{trigger}} + \text{MET filter}) / \text{MET filter}$$

$$(P_T + \tau^{\text{ID}} + \tau^{\text{trigger or } \mu^{\text{trigger}}} + \text{MET filter}) / \text{MET filter}$$