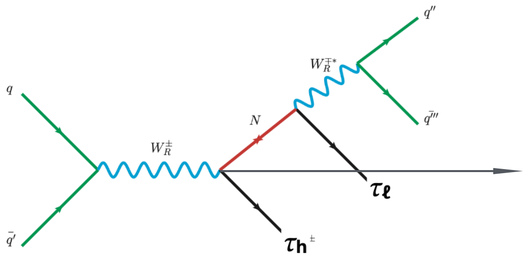
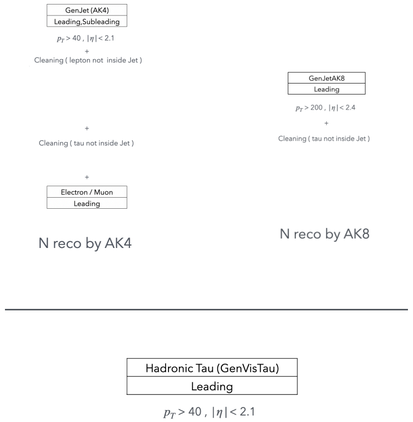
Genparticle & LHE particle

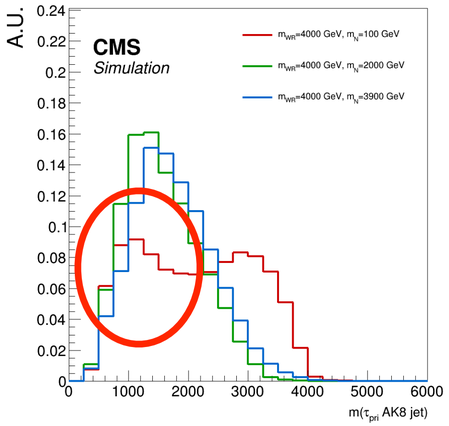
W_R reconstruction

Chihwan.An. 2025.03.04

By last presentation ..







W_R reconstruction

W_R reco by AK8

There was a strange peak at W_R 4000,N100

In about W_R~1000 region

Checking WR mass peak

- Checked with two methods , using LHE particle and Genparticle with Hardprocess

LHE particle

- Two outgoing quarks

- First tau , Second tau are used leading p_T and subleading p_T each

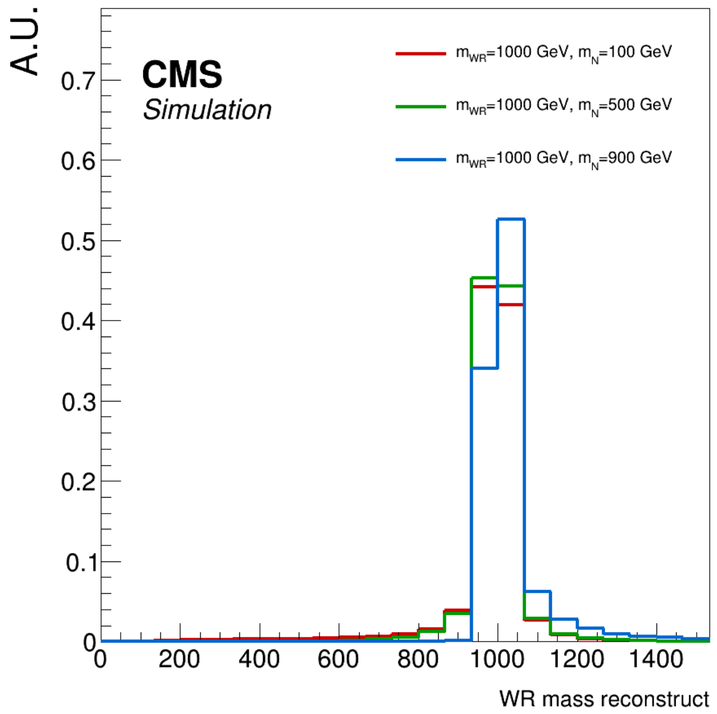
-This could cause problem when First tau p_T is low and Second p_T is high, especially it would often happen when W_R ~ N

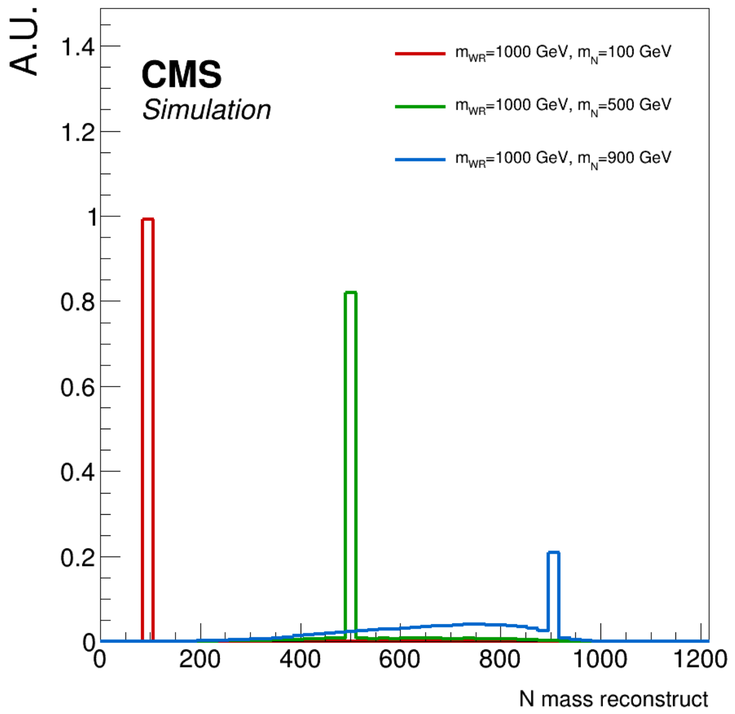
Gen particle

- Two quarks from N

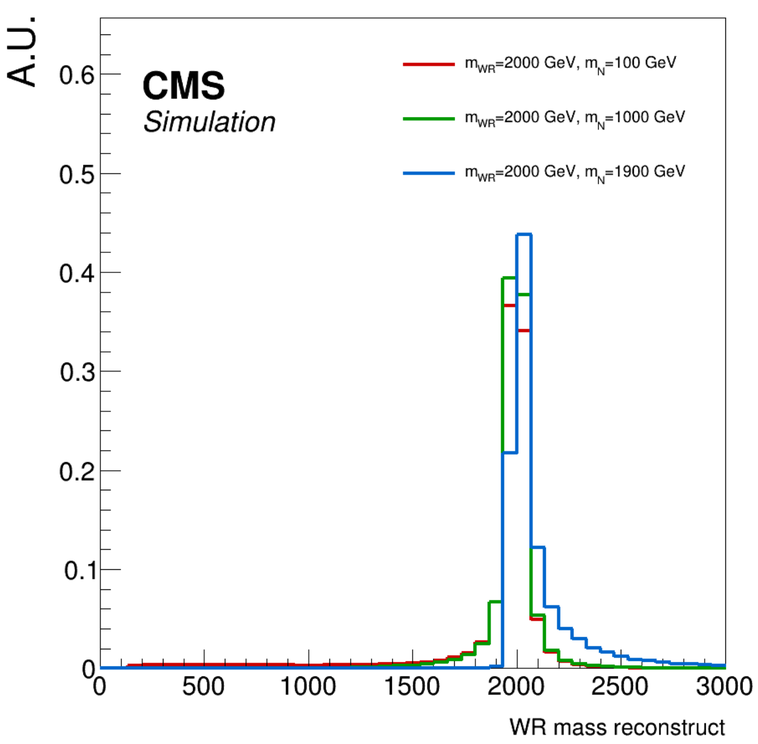
- First tau is from W_R or qq , Second tau is from N

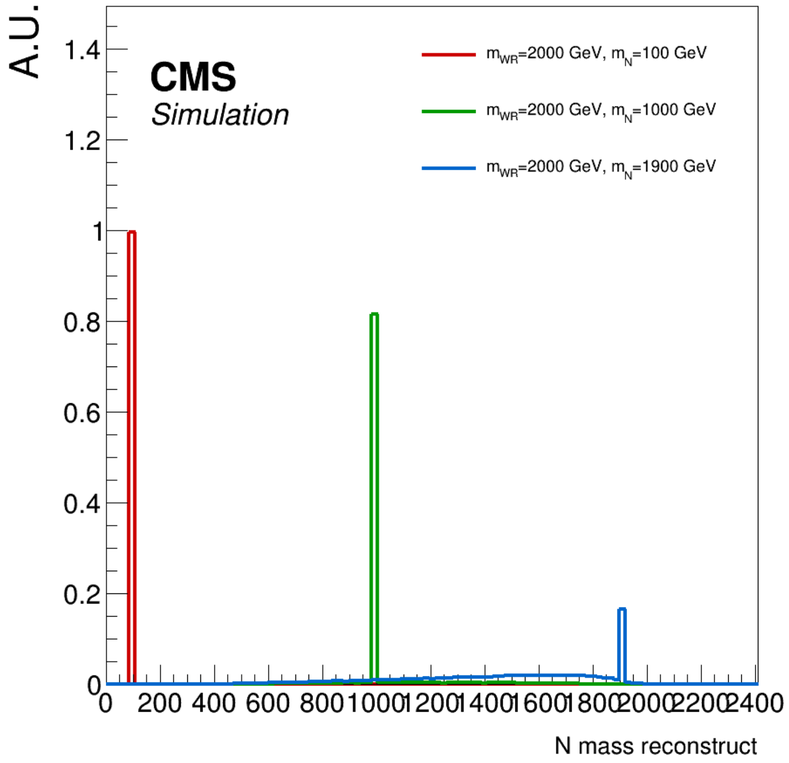
W_R 1000 GeV , reconstruction of W_R & N with LHE particle



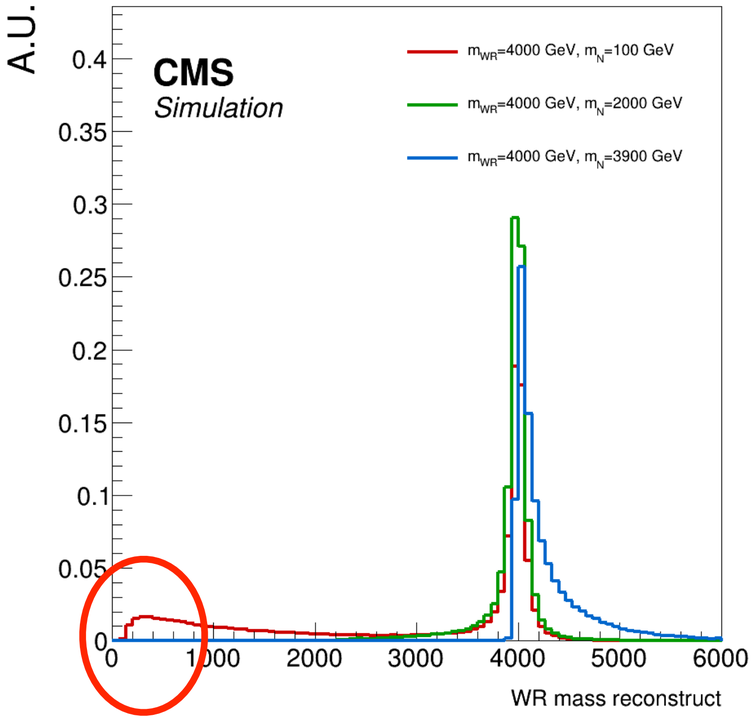


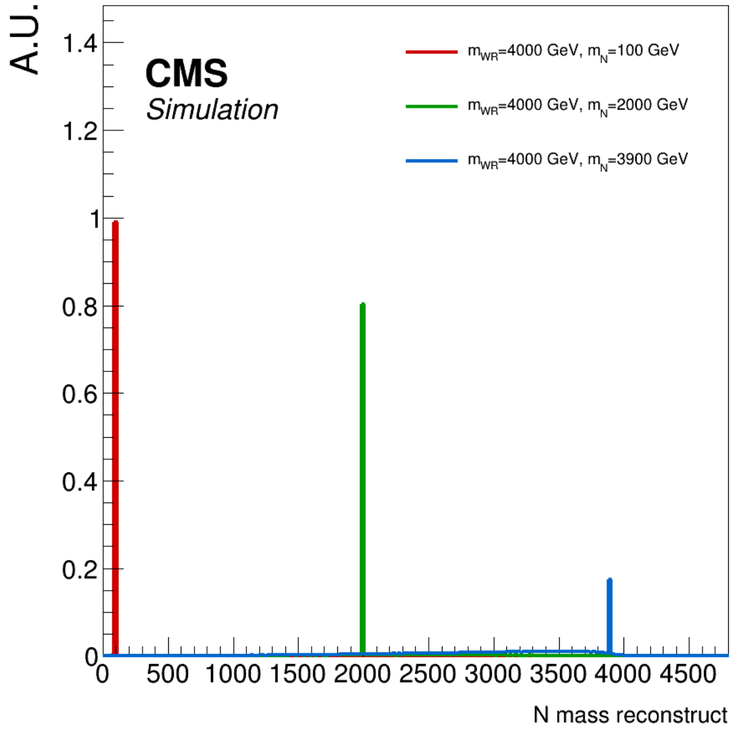
W_R 2000 GeV , reconstruction of W_R & N with LHE particle





W_R 4000 GeV , reconstruction of W_R & N with LHE particle





Checking WR mass peak

- Checked with two methods , using LHE particle and Genparticle with Hardprocess

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Gen particle

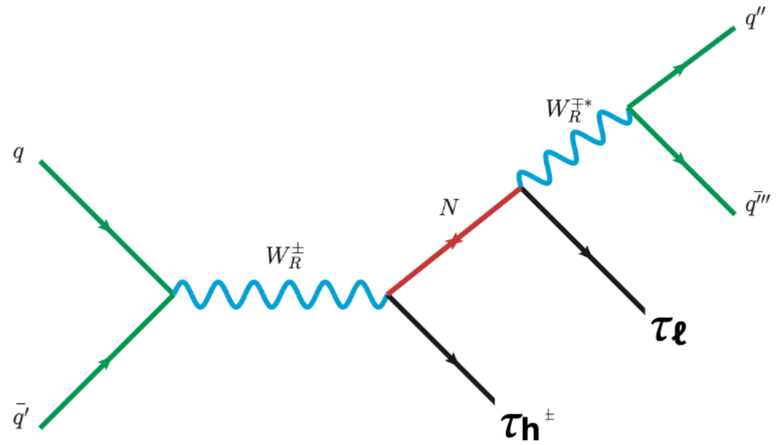
- Two quarks from N

- First tau is from W_R (not hardprocess) or qq , Second tau is from N

Checking WR mass peak with Gen particle

Genparticle is effective to check offshell effect ,

Offshell particle does not appear in “Genparticle”



Basic reconstruction strategy :

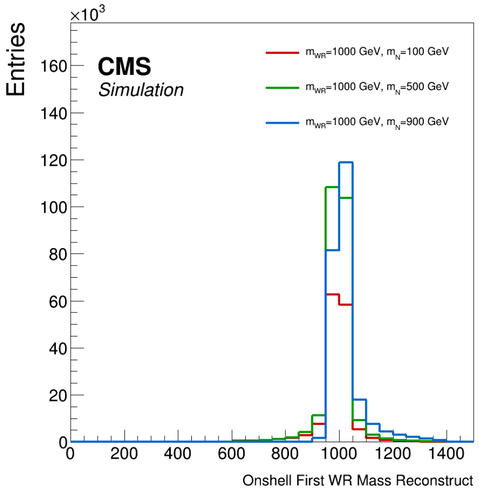
Second offshell W_R which is close to N appears as onshell ,
Corrections applied by appending quarks is from W_R

1. Find quarks from N (Reconstruct second W_R)
2. Sum second W_R from 1. and tau from N (Reconstruct N)

3. Sum tau from W_R and N → Onshell First W_R

3. Sum (tau not from N)and N → Offshell Second W_R

W_R 1000 GeV , reconstruction of W_R with gen particle



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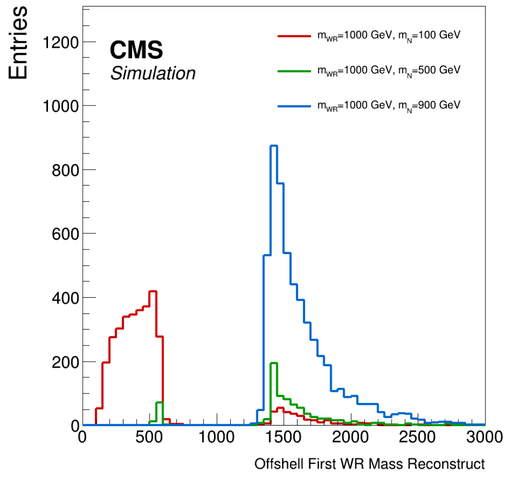
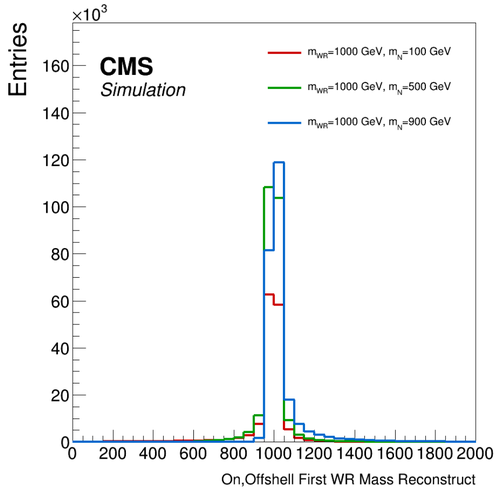
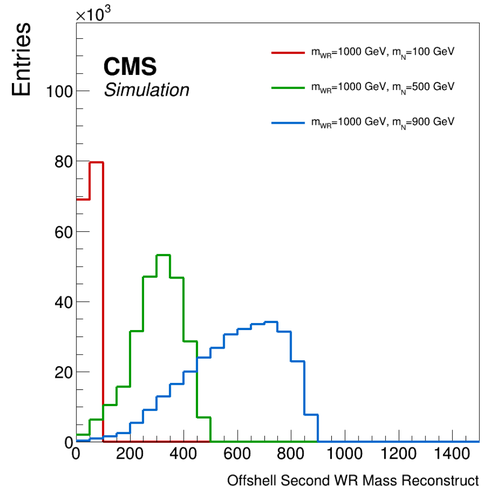


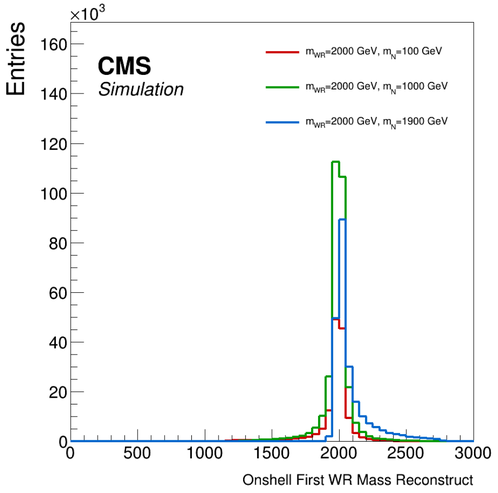




First W_R

Second W_R

W_R 2000 GeV , reconstruction of W_R with gen particle



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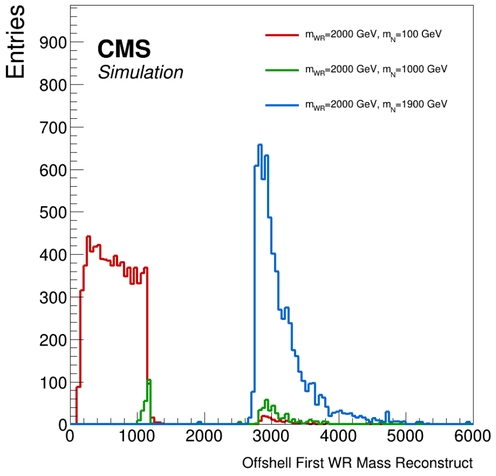
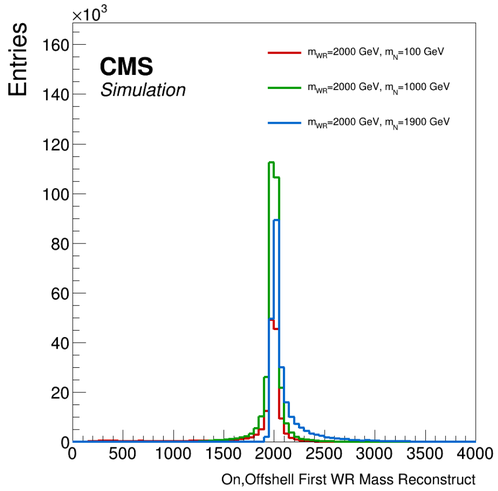
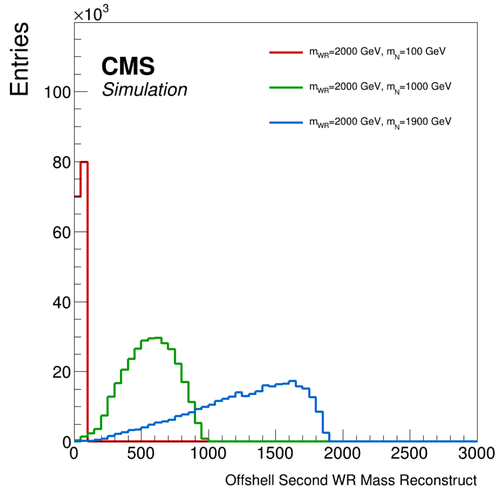


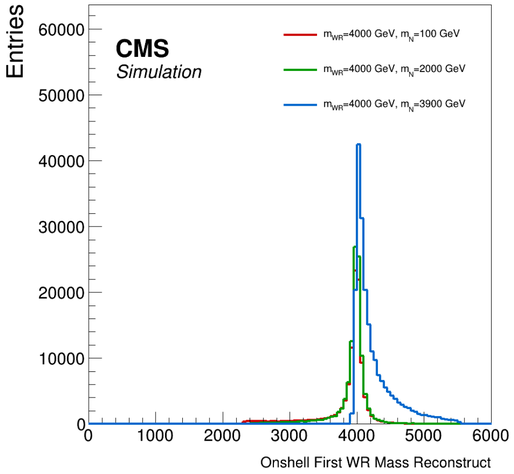




First W_R

Second W_R

W_R 4000 GeV , reconstruction of W_R with gen particle



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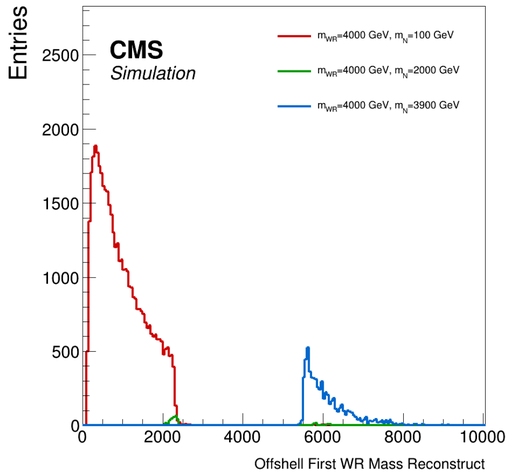
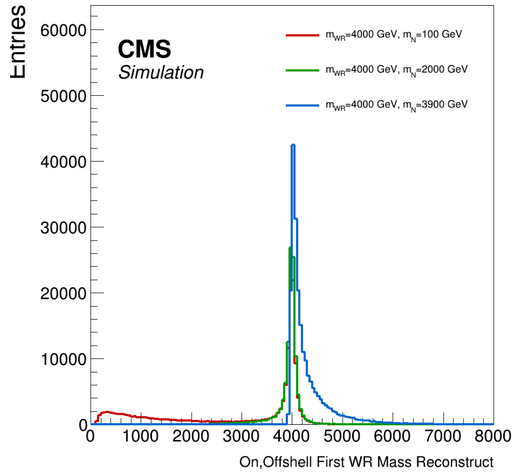
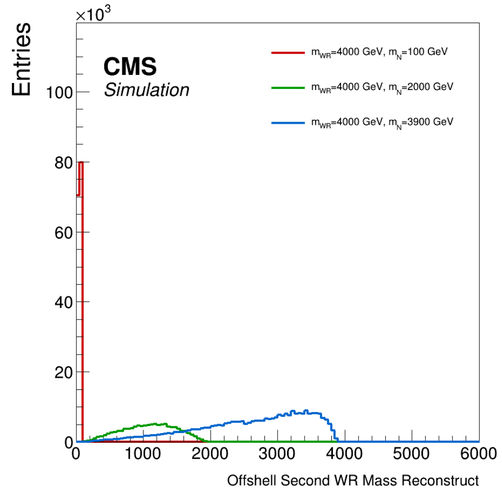




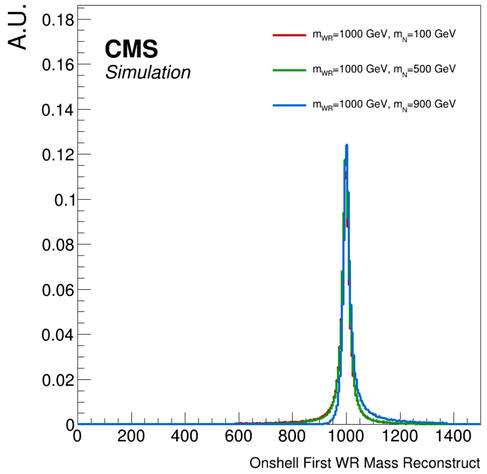


First W_R

Second W_R

Thanks!

W_R 1000 GeV , reconstruction of W_R with gen particle



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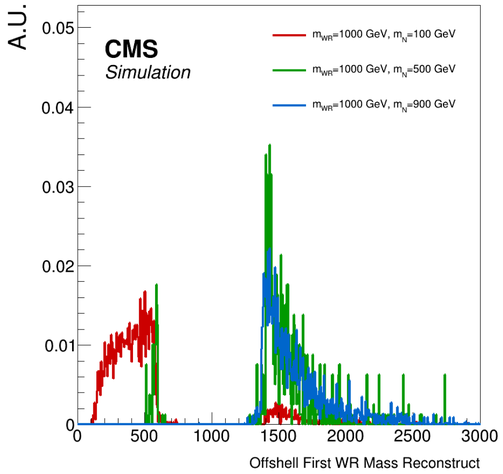
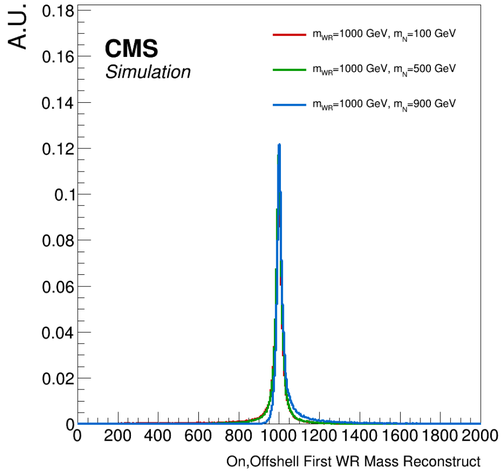
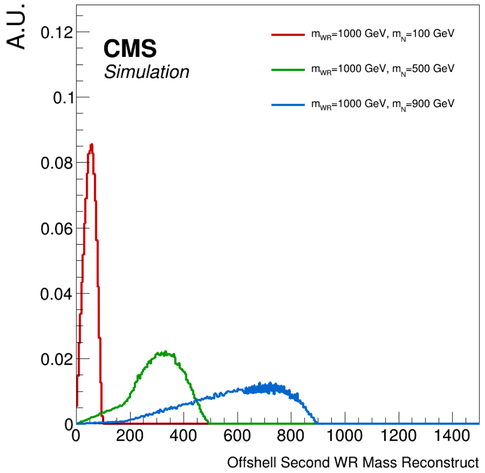


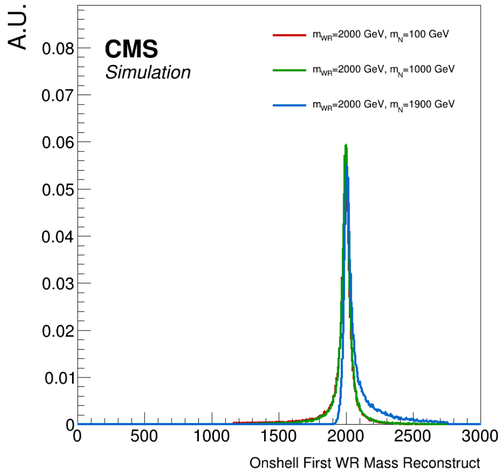


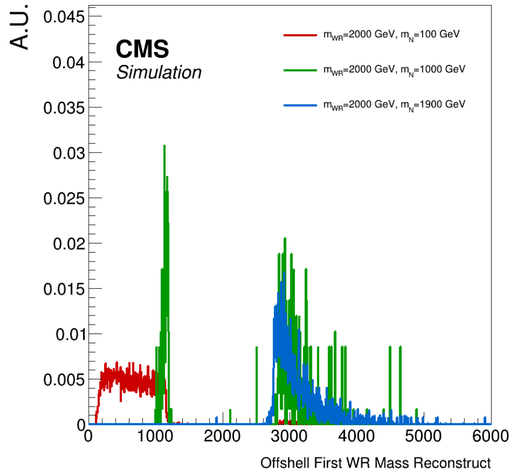


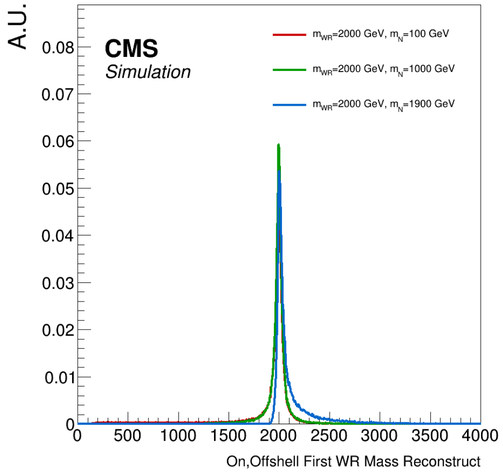
First W_R

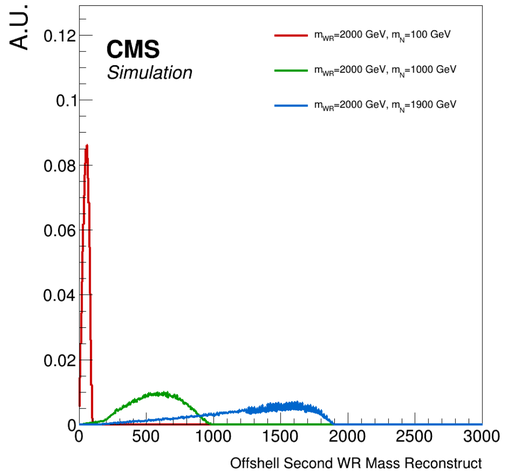
Second W_R

W_R 2000 GeV , reconstruction of W_R with gen particle





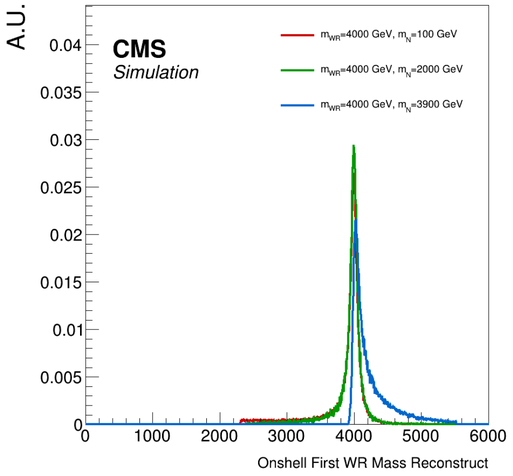




First W_R

Second W_R

W_R 4000 GeV , reconstruction of W_R with gen particle



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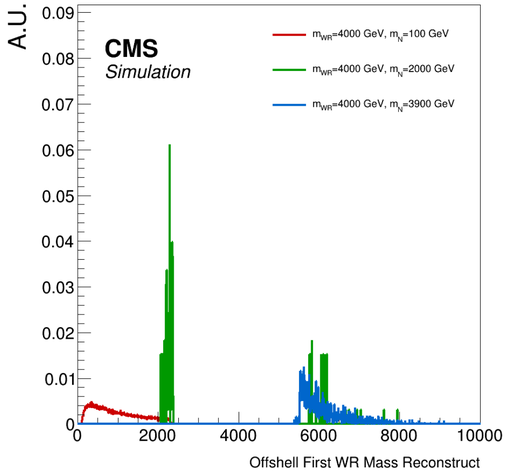

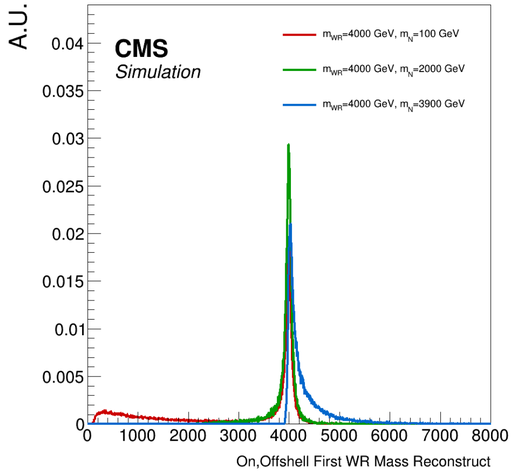

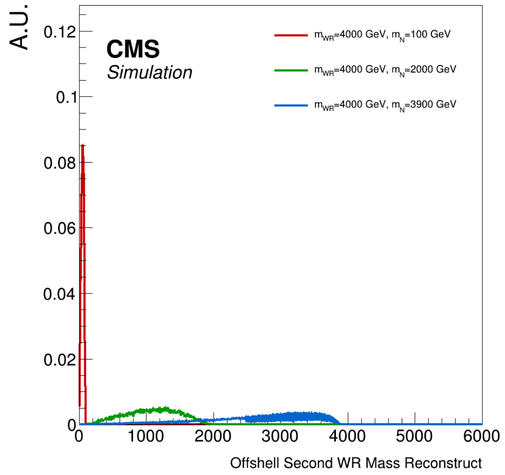

First W_R

Second W_R