

Z(v)WV(1v 1v)

Dipesh B.

SMU

Energy scale 240GeV

365 GeV

Int. Luminosities

$$\sigma = 200\text{pb}$$

$$\sigma = 120\text{pb}$$

$$L_{\text{int}} = 10.8\text{ab}^{-1}$$

$$n_{\text{tot}} = 2.16\text{e9}$$

$$n_{\text{tot}} = 1.296\text{e9}$$

$$n_{\text{tot}} = L_{\text{int}} \times \sigma$$

$$L_{\text{int}} = 3\text{ab}^{-1}$$

$$n_{\text{tot}} = 6\text{e8}$$

$$n_{\text{tot}} = 3.6\text{e8}$$

Signal: $wzp6_{ee_nunuH_HWW_ecm240} \rightarrow \sigma = 0.00994\text{pb}$

Background:

$p8_{ee_ZZ_ecm240} \rightarrow \sigma = 1.35899\text{pb}$

$p8_{ee_WW_ecm240} \rightarrow \sigma = 16.4385\text{pb}$

$$N_{\text{events}} = \sigma \cdot L \cdot r, \quad r \rightarrow \text{branching ratio}$$

Bosons	Products	Branching frac	Major Backgrounds for WW
Z	$I+I-$	0.037 (each flavor) dsb 0.15, uc 0.12 (tot .69)	$ee \rightarrow ZZ$
	$q\bar{q}$		$ee \rightarrow WW$
	$\nu\bar{\nu}$	0.2	$ee \rightarrow ZW$
W	$I\nu$	0.109 (each flavor)	$ee \rightarrow q\bar{q}$
	$q\bar{q}$	0.68 (tot)	$ee \rightarrow I+I-$ (plus $\nu\bar{\nu}$)

each * no.of flavor(3) = total

$$L=10.8 \text{ ab}^{-1} = 10,800 \text{ fb}^{-1},$$

$$N_{\text{signal_events}}=0.00994 \times 10,800 \times r_{\text{tot}} = 2432.2 \text{ events}$$

$$, r_{\text{tot}} = r_W \times r_Z = 0.01166 \times 0.2=0.002332$$

$$N_{\text{b1_events_W}\rightarrow I\nu} = 2073578 \text{ events}$$

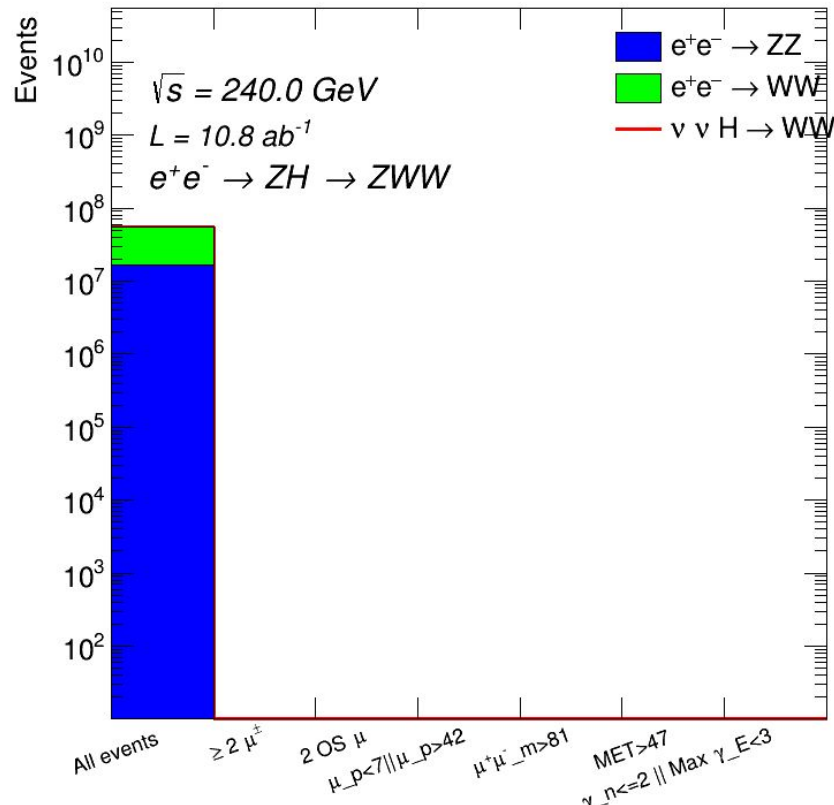
$$N_{\text{b2_events_Z}\rightarrow \nu\bar{\nu}} = 586957 \text{ events} .$$

$$, r_{\text{tot}} = r_W \times r_Z = 0.01166 \times 0.2=0.002332$$

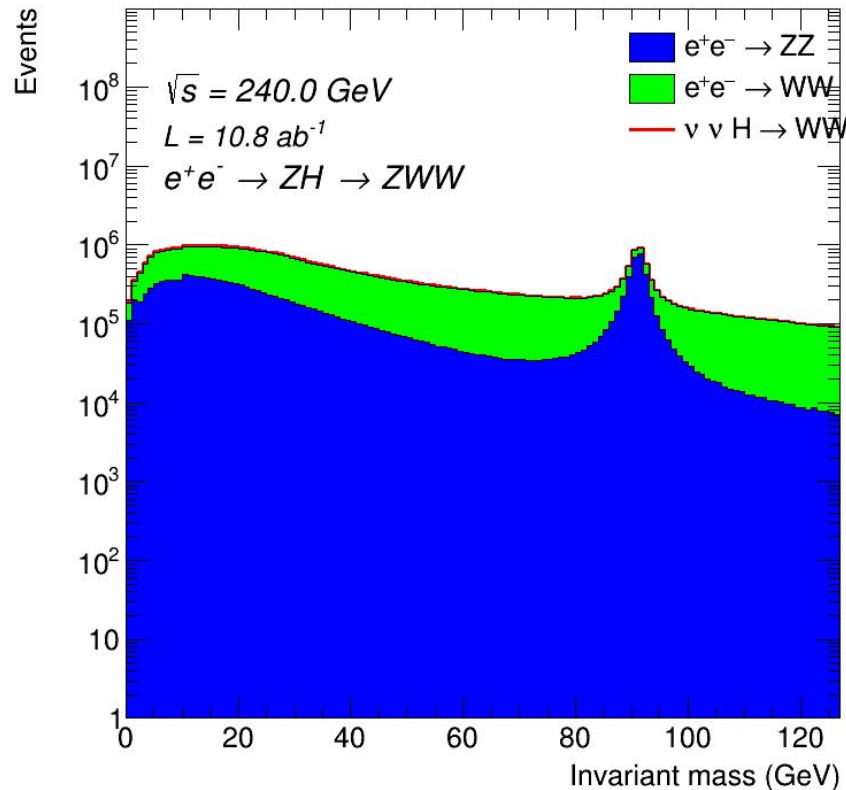
ZH \rightarrow nu nu (1 nu)(1 nu)

No Cuts, Cut 0

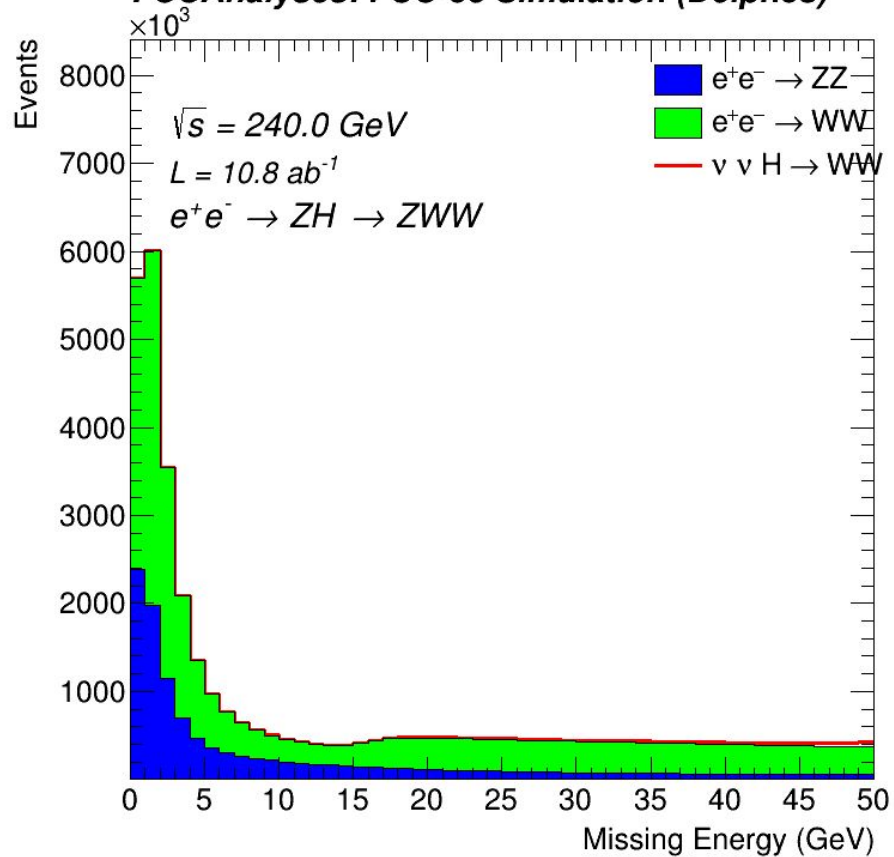
FCCAnalyses: FCC-ee Simulation (Delphes)



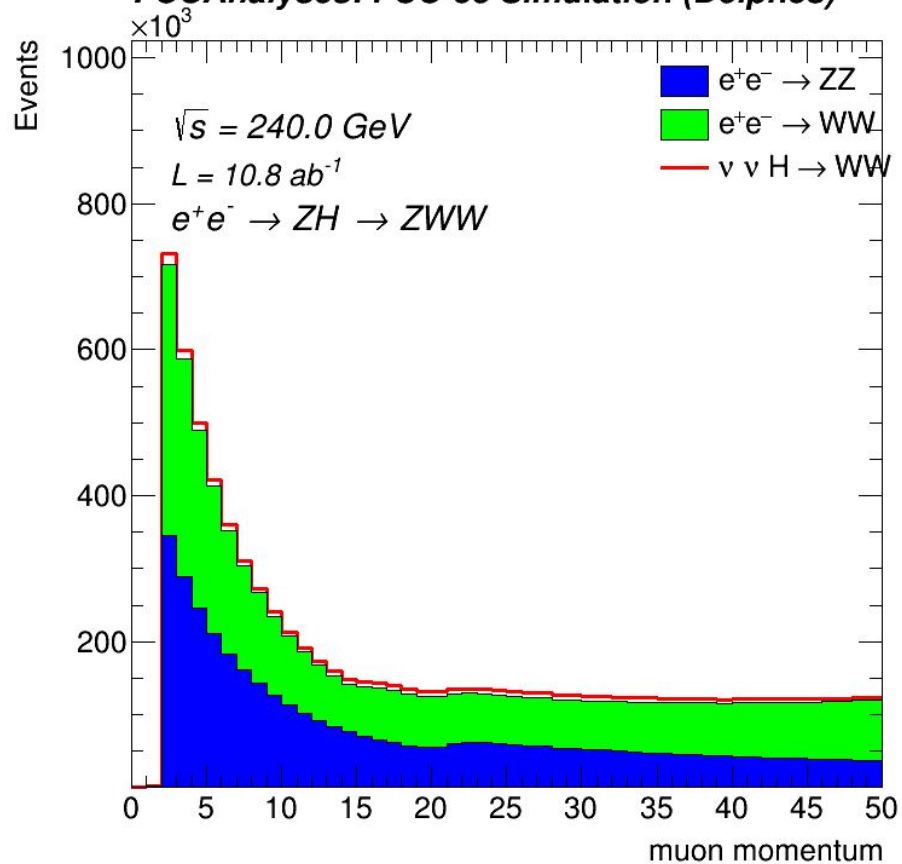
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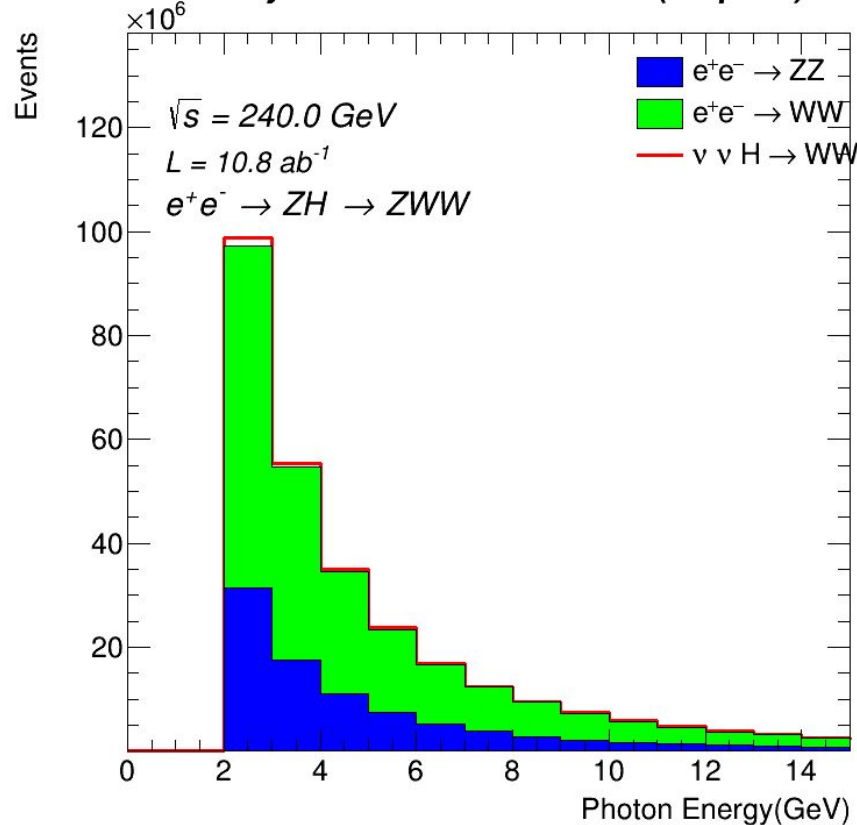
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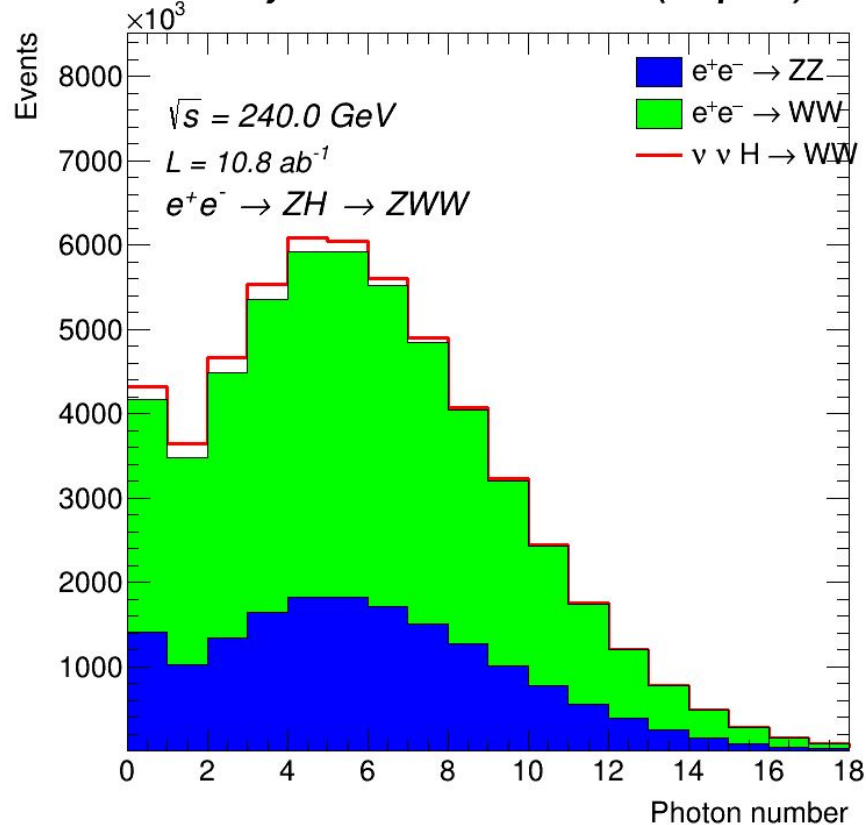
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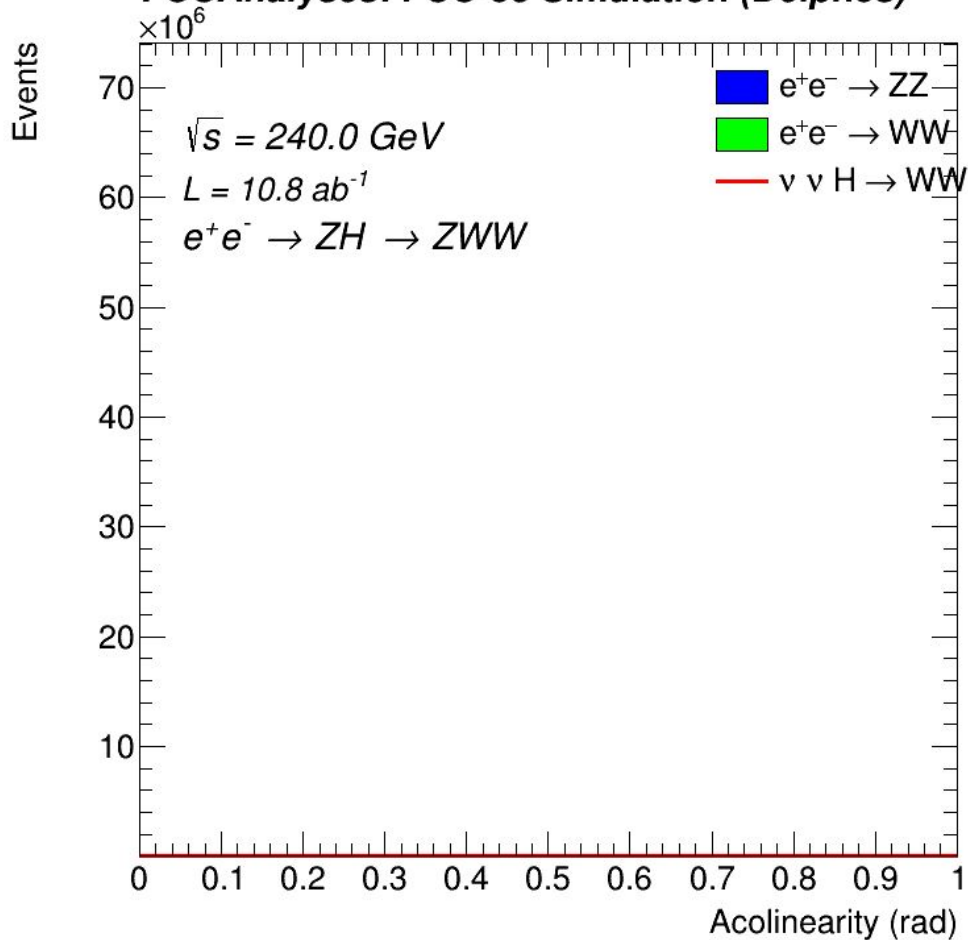
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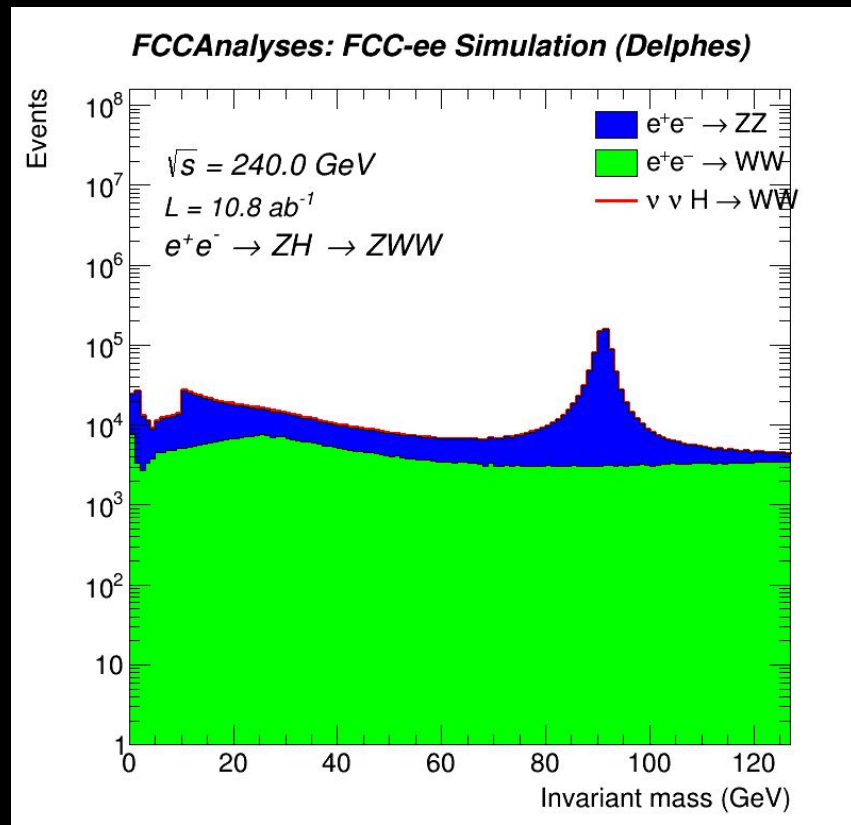
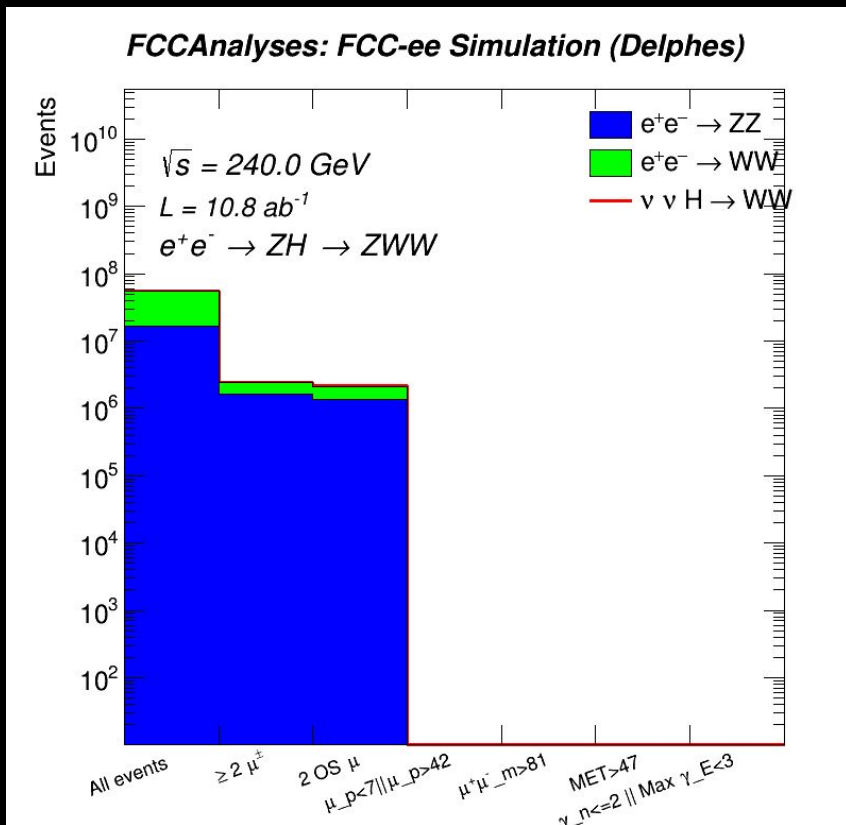
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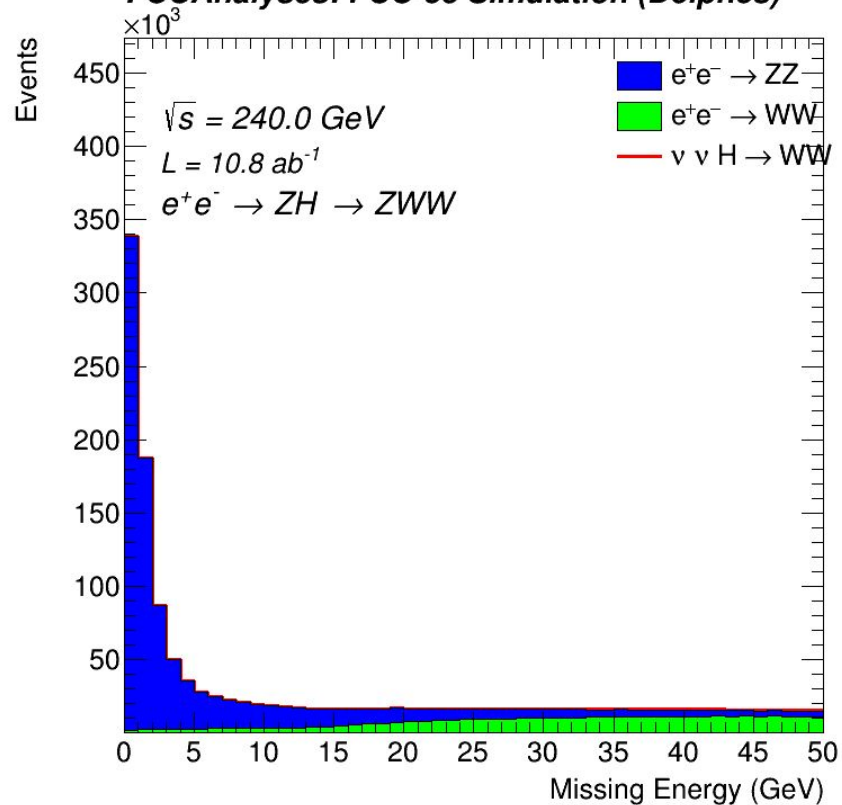
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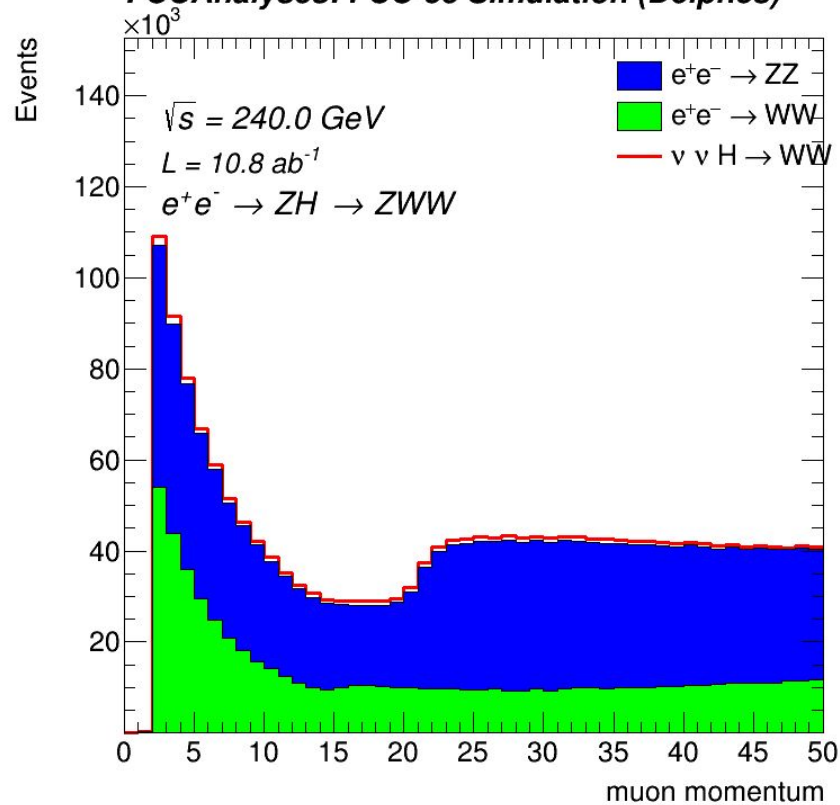
Cut 1, 2: $>2\mu$, $2OS\ \mu$



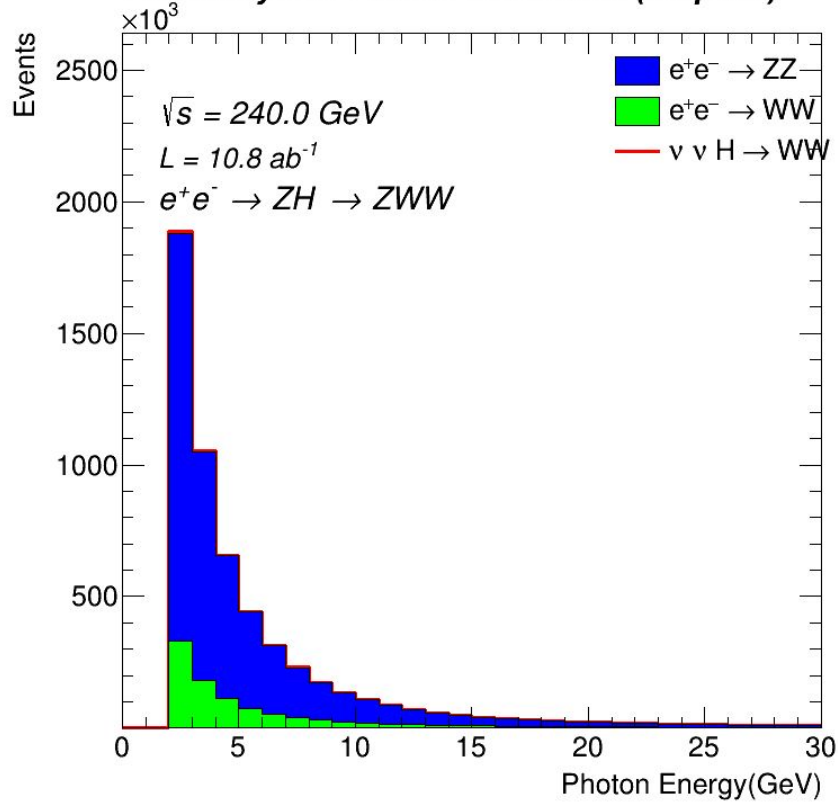
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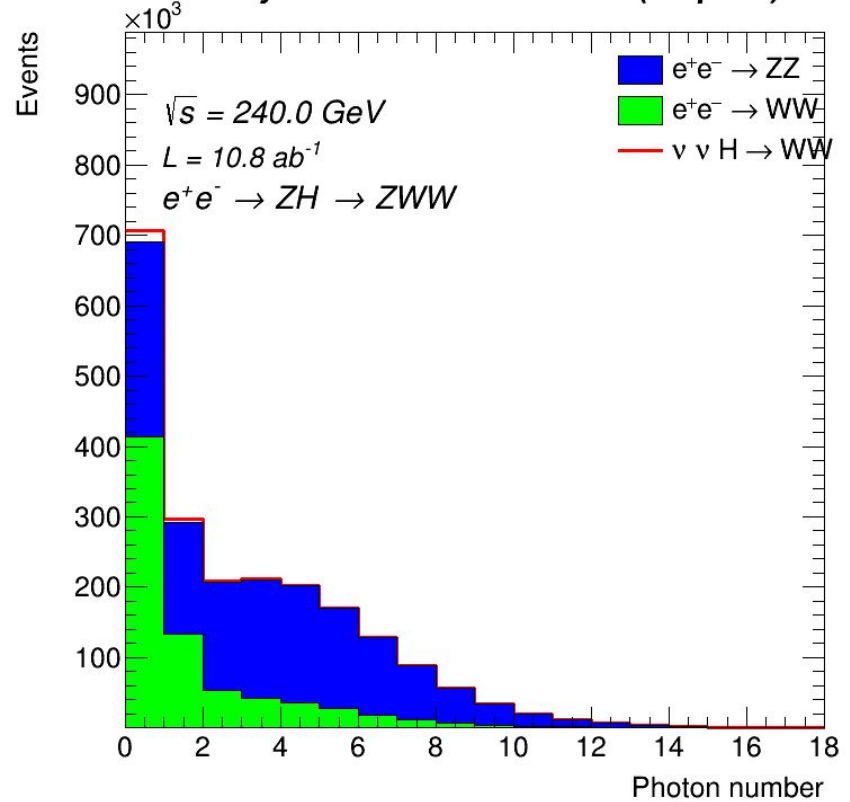
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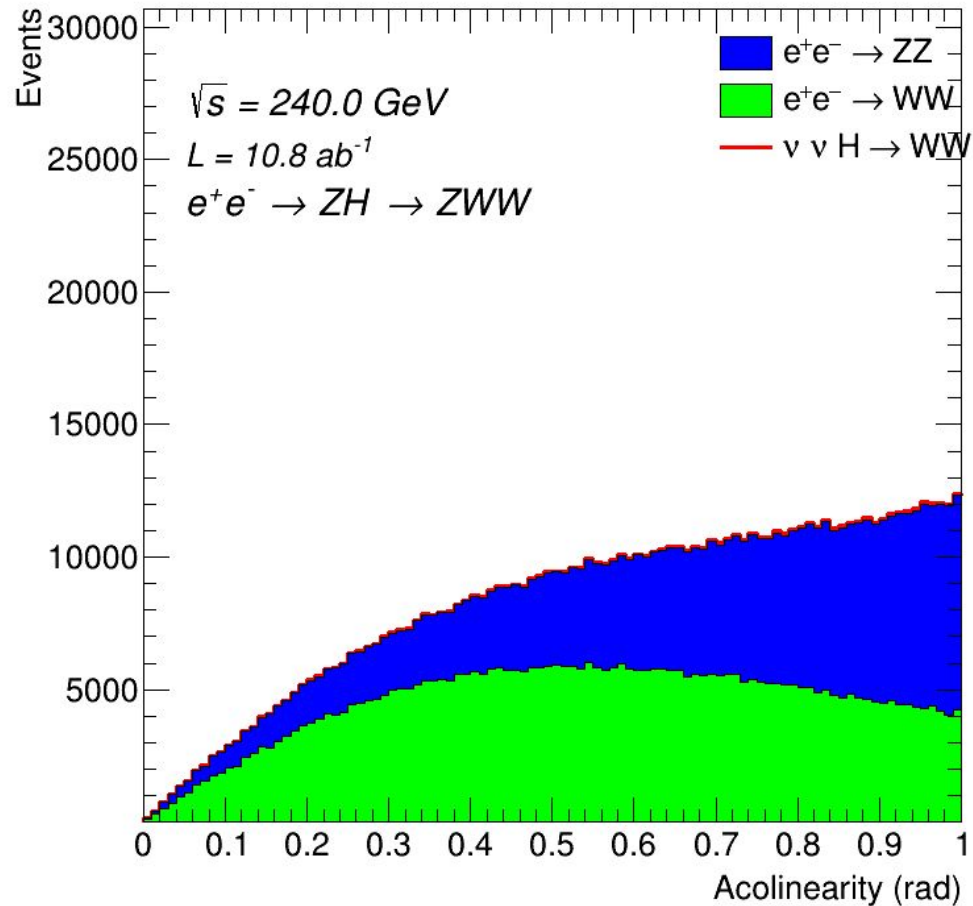
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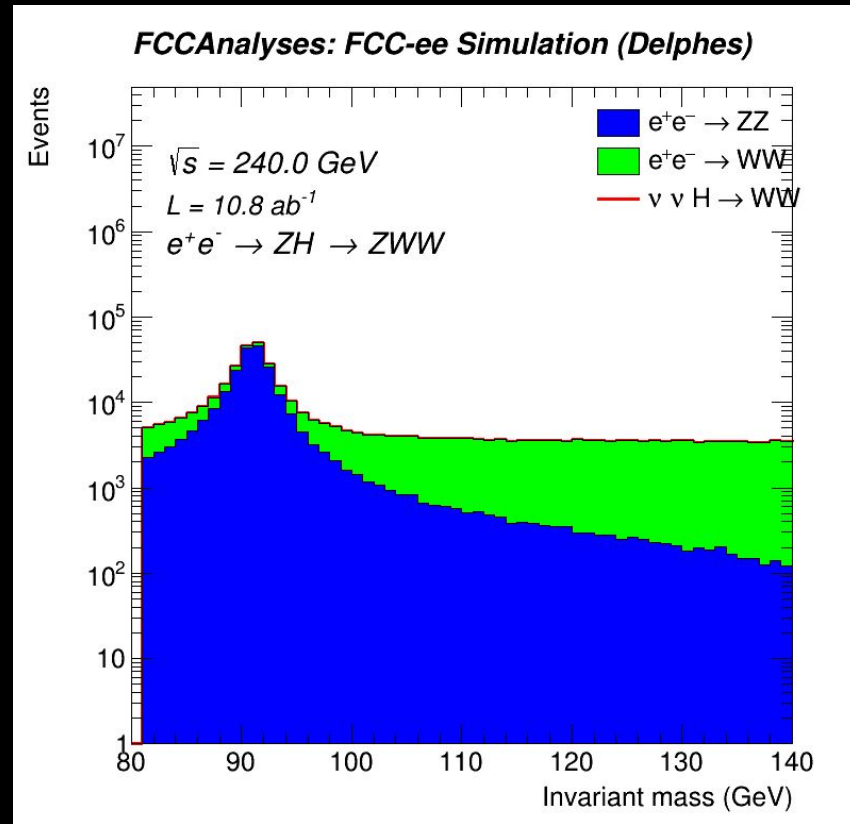
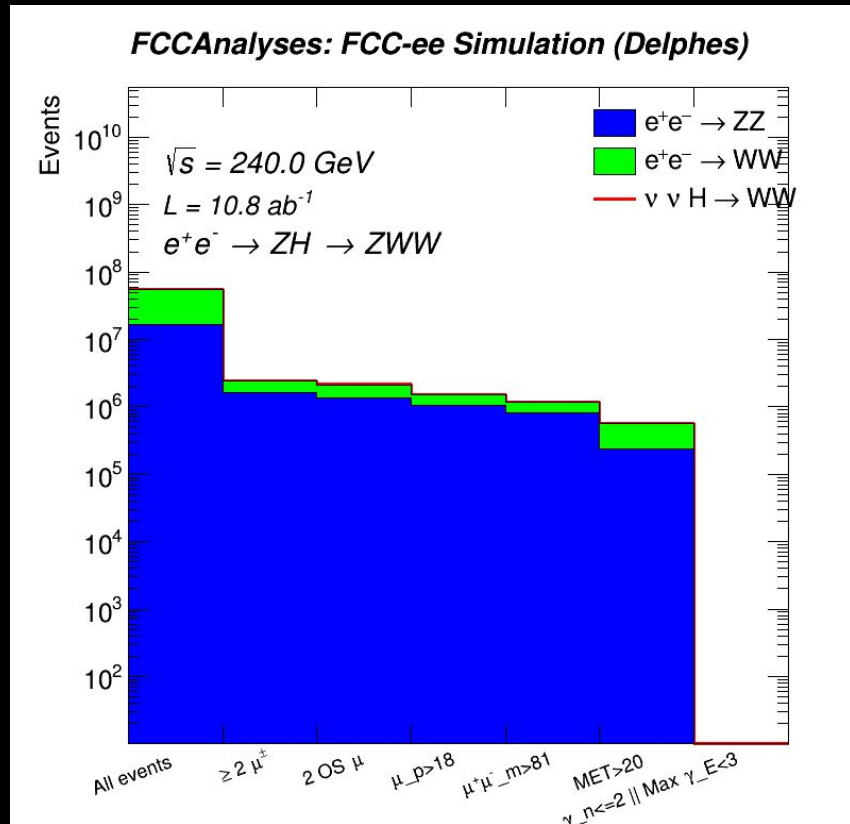
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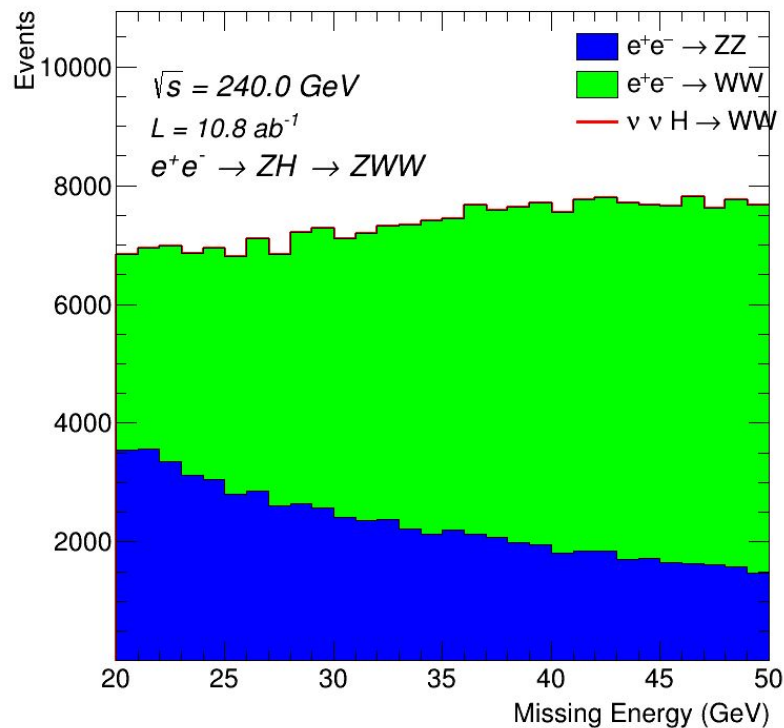
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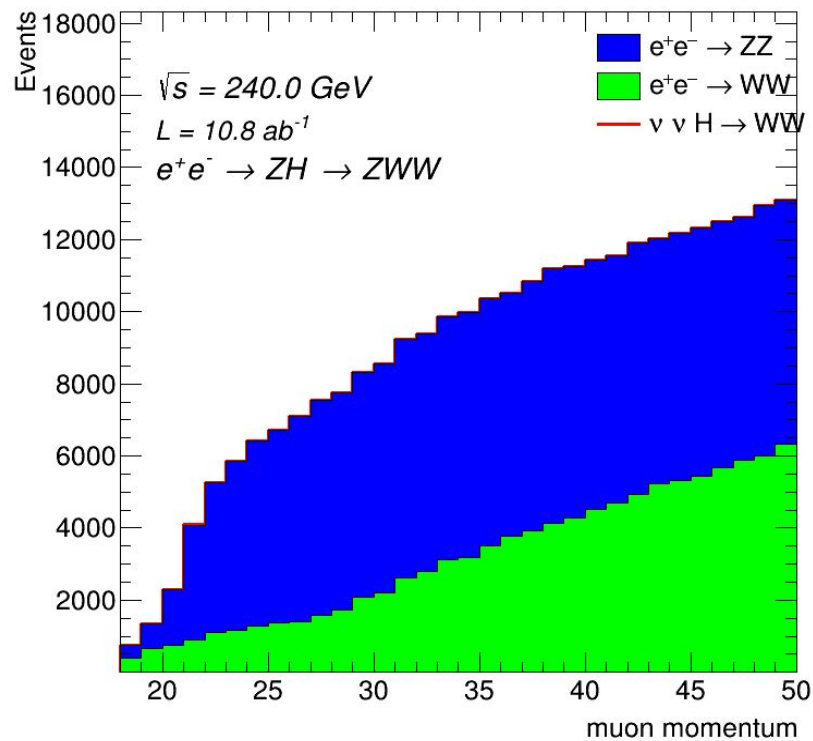
Cut 3, 4, 5: $\mu_p > 18$, $\mu_m > 81$, MET > 20



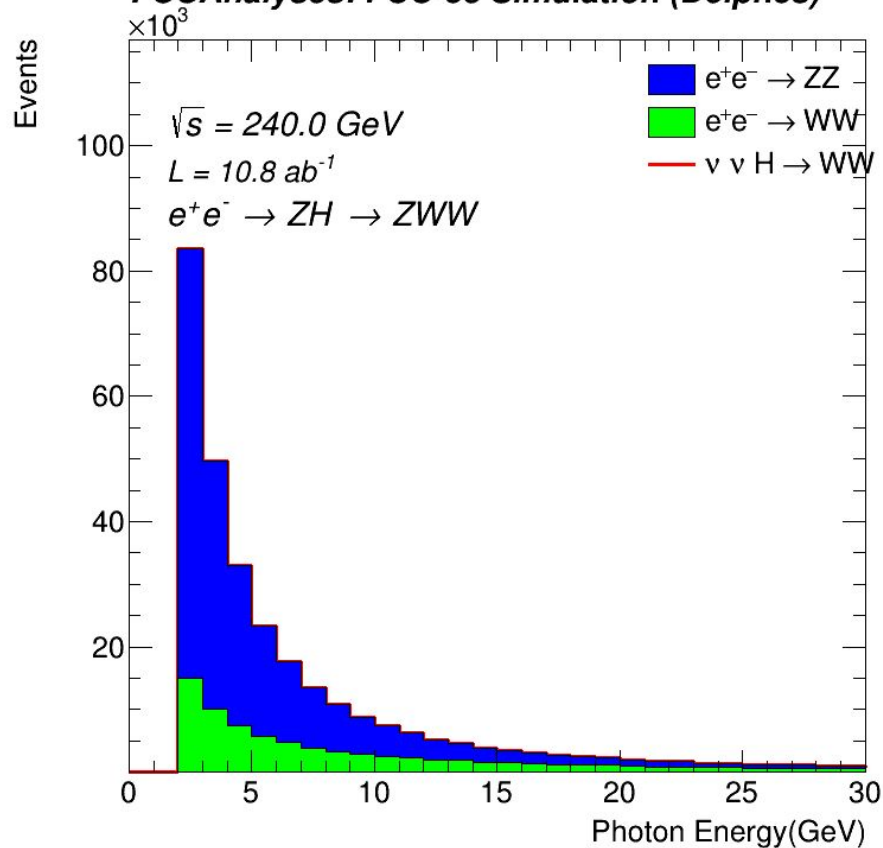
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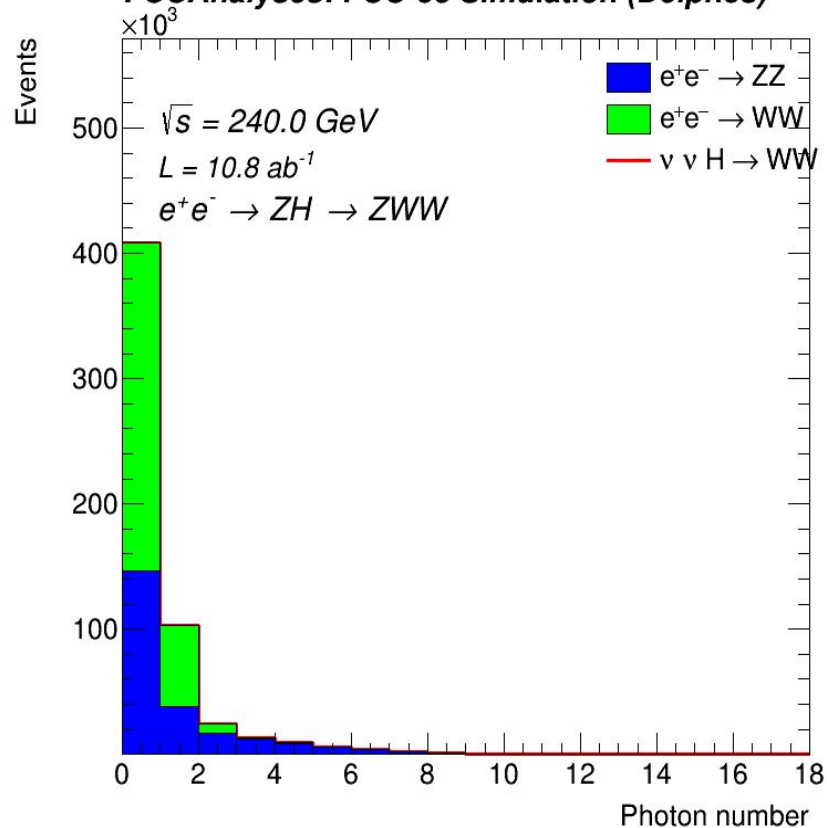
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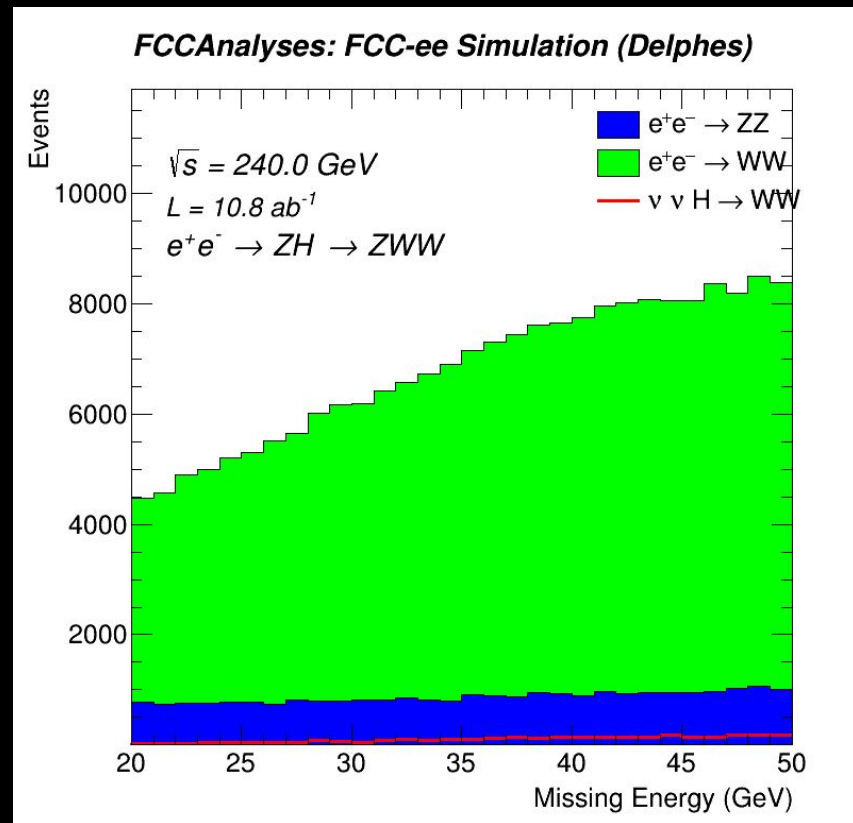
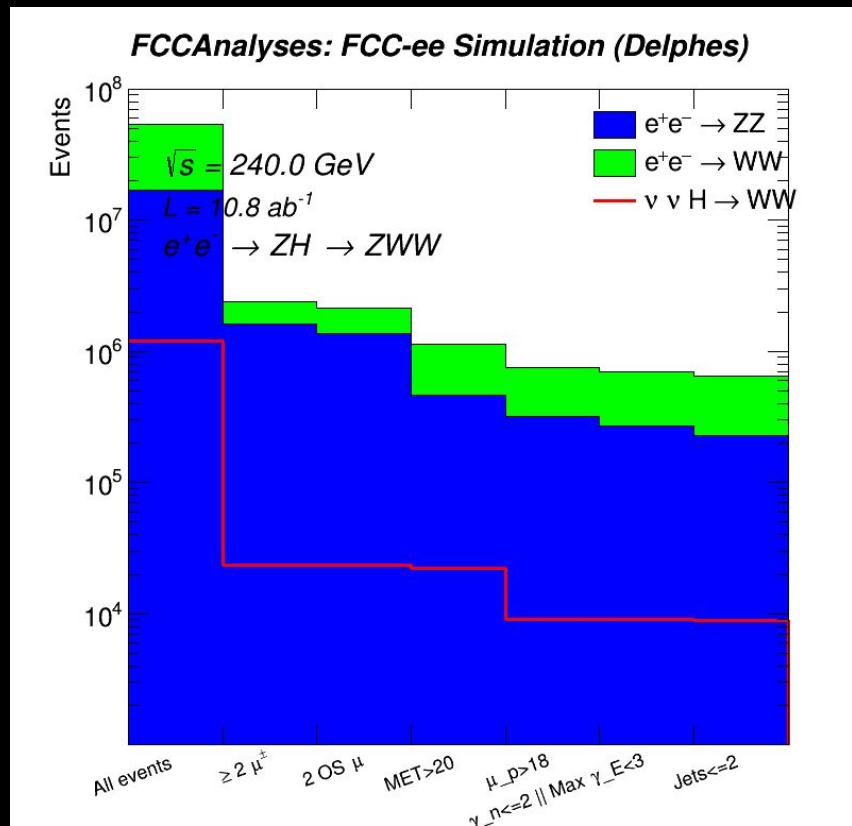
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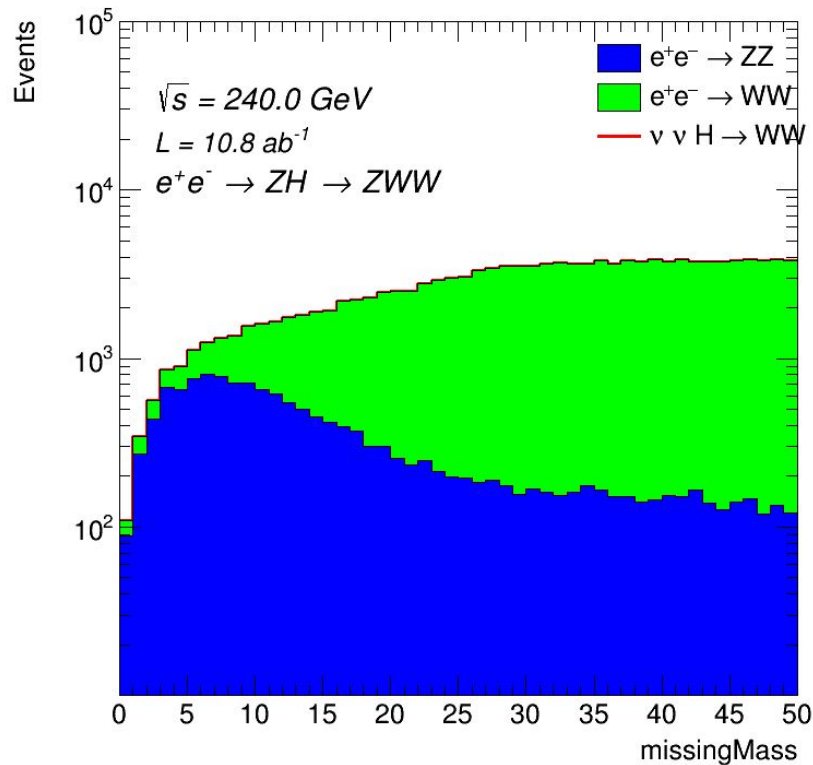
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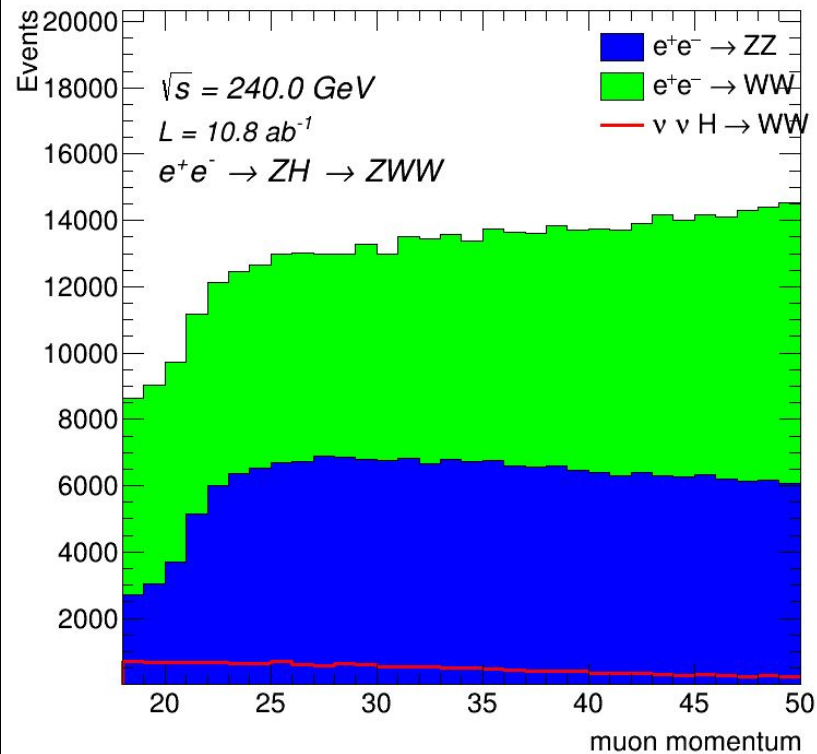
Cut 6, Cut 7: $\gamma_n \leq 2 \parallel \text{Max} \gamma_E < 3, \text{jets}_n < 2$



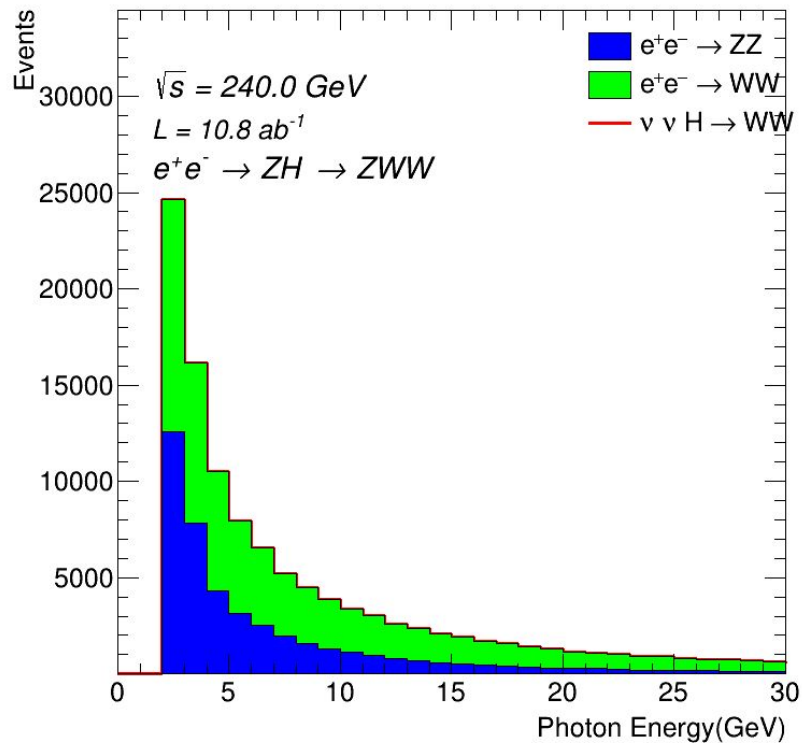
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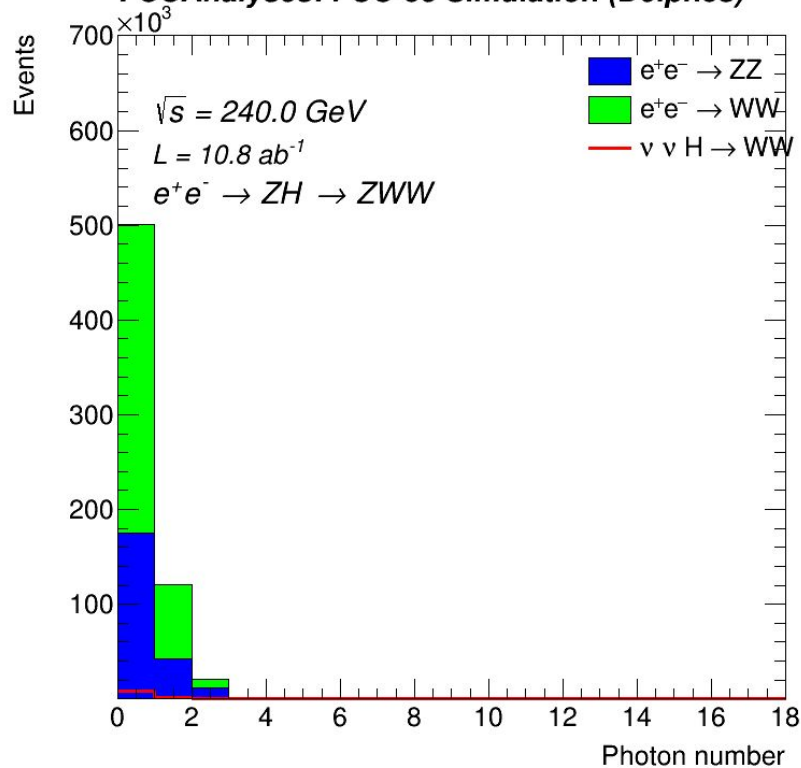
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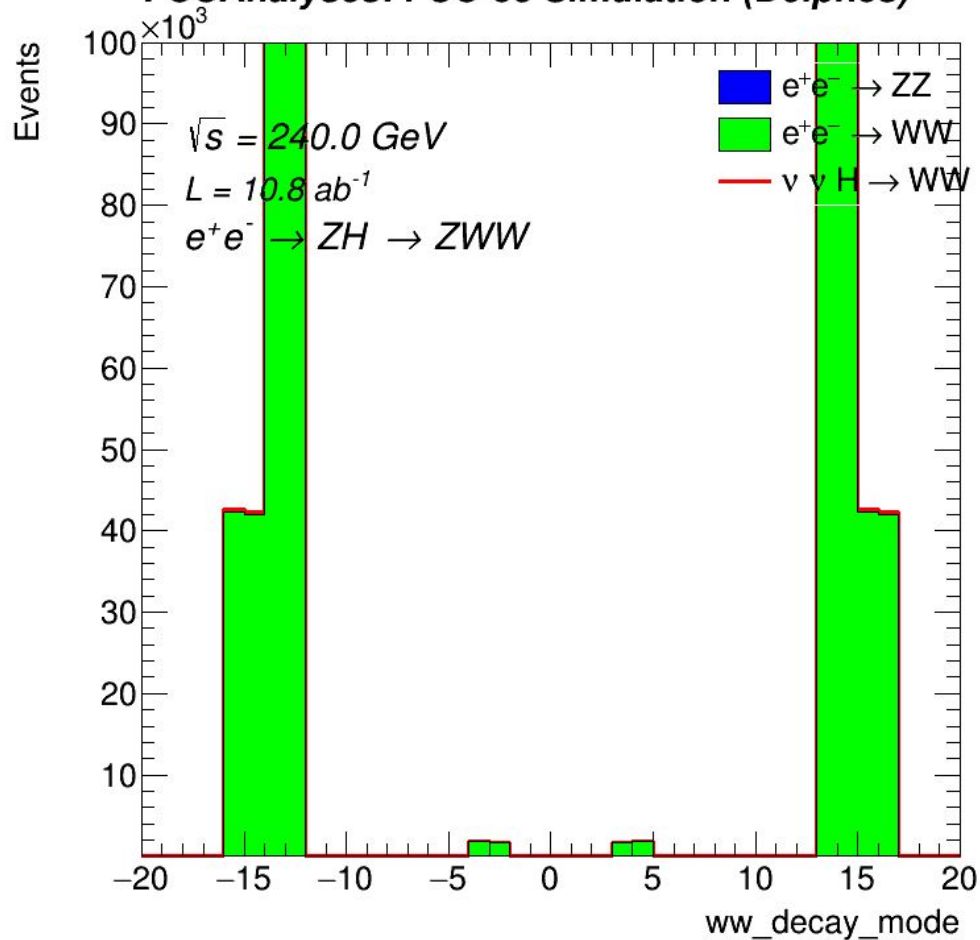
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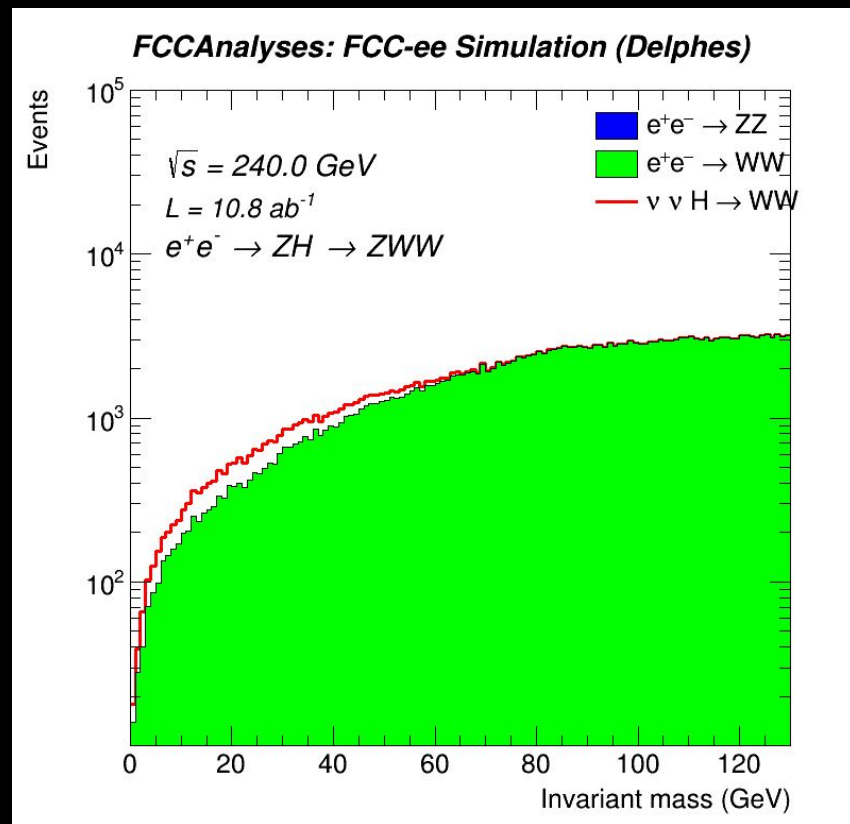
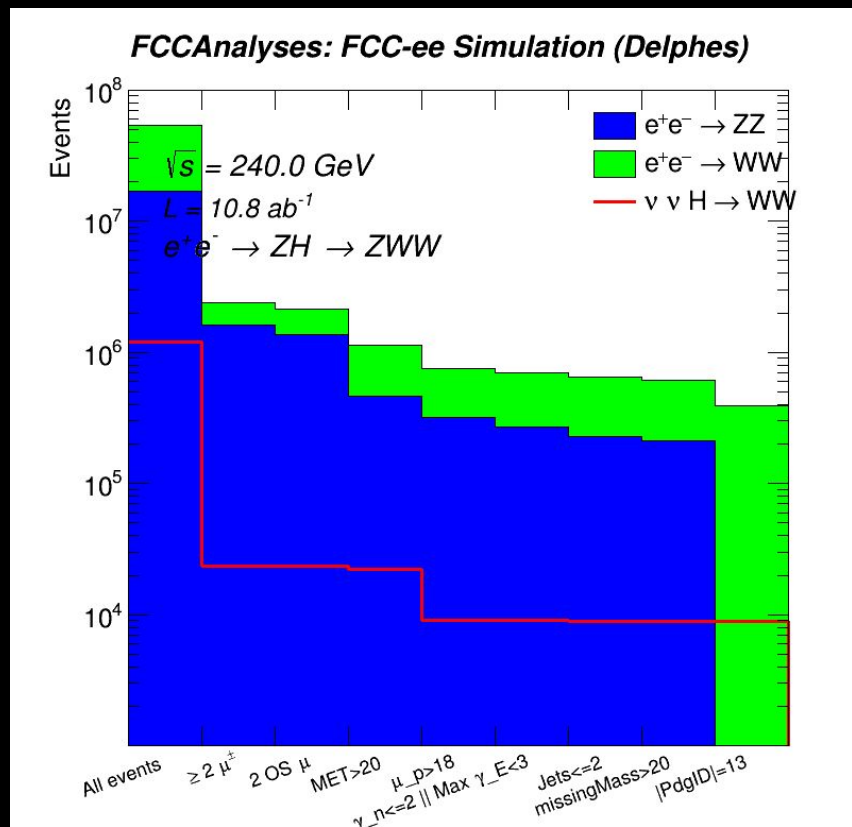
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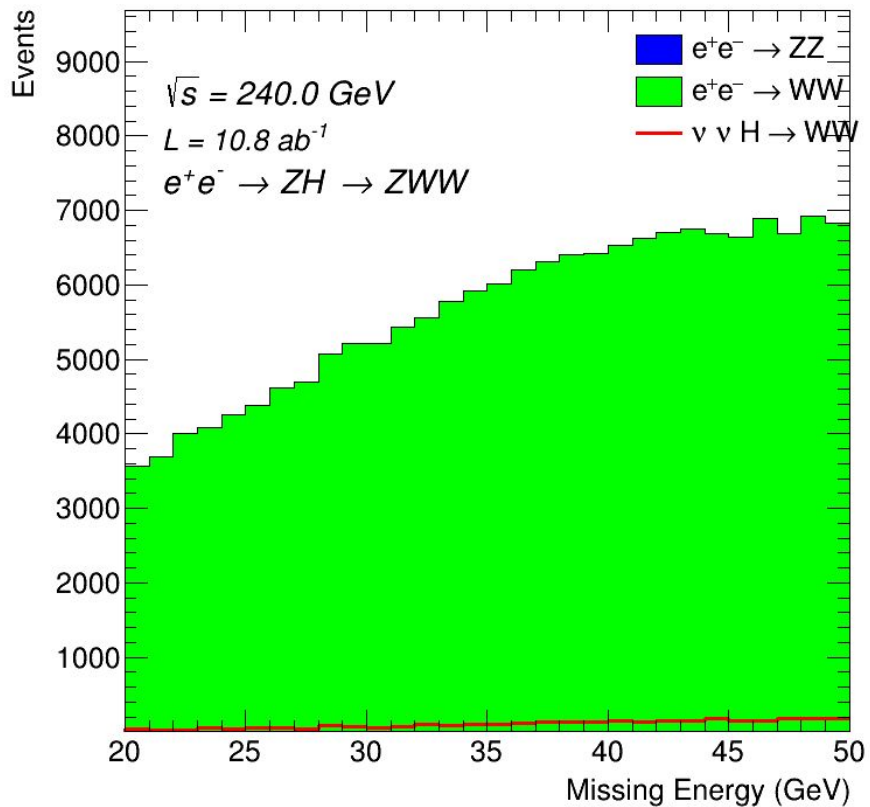
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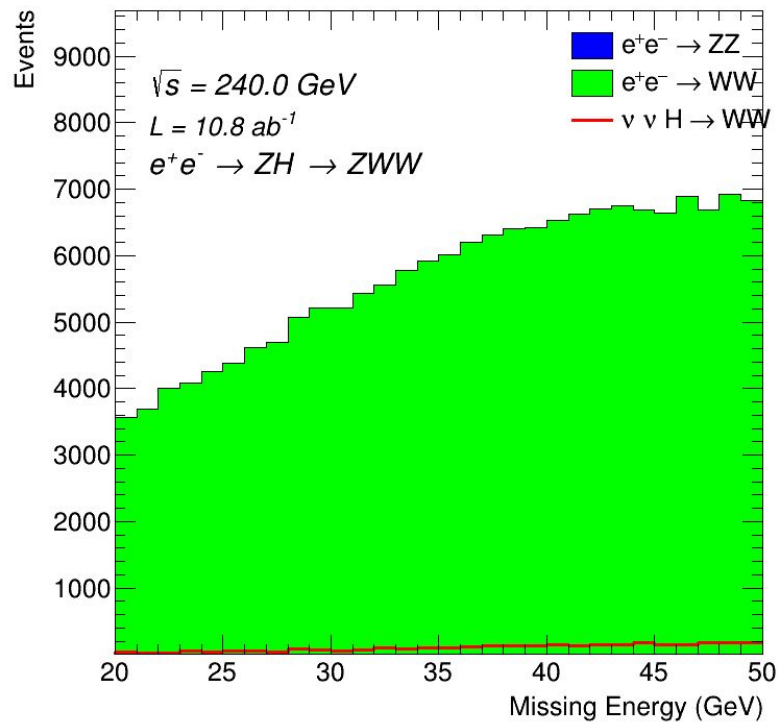
More Cuts: missingMass>20, |PdgID|>=11



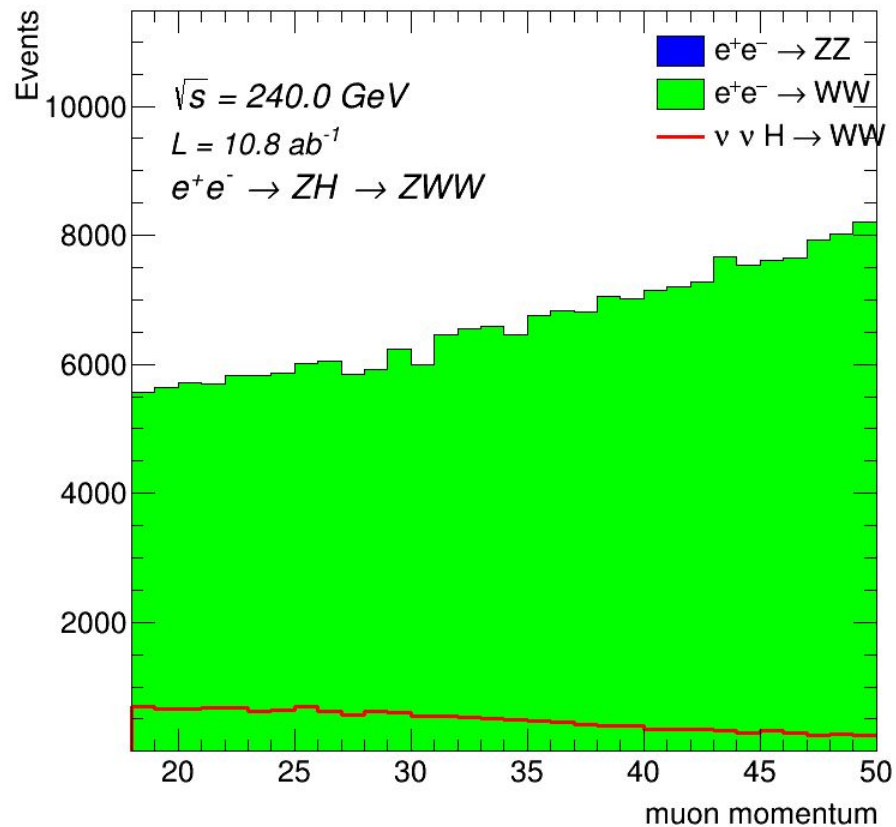
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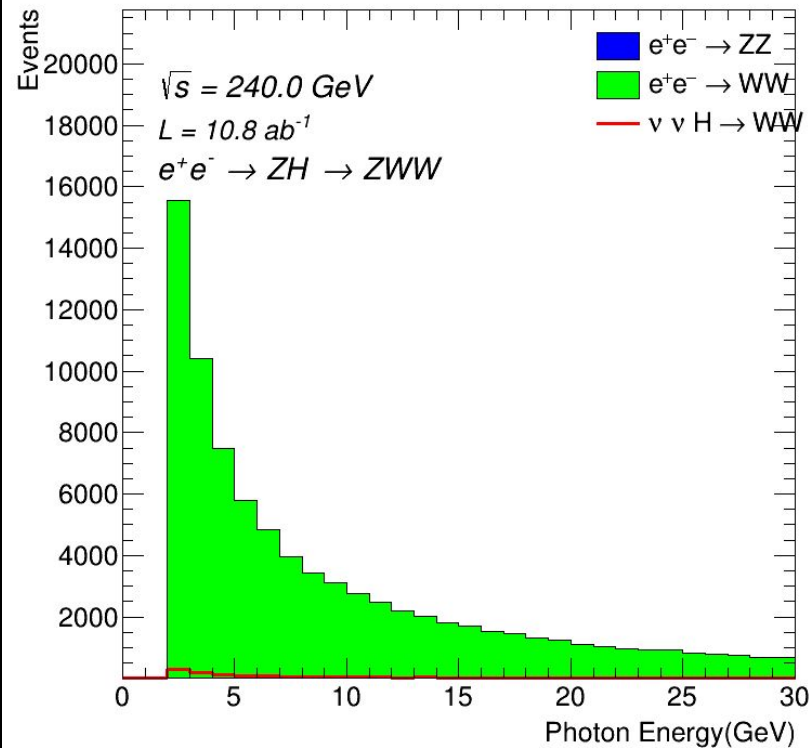
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