

Preliminary Work on NMSSM

$$h_{1,2} \rightarrow 2a_1$$

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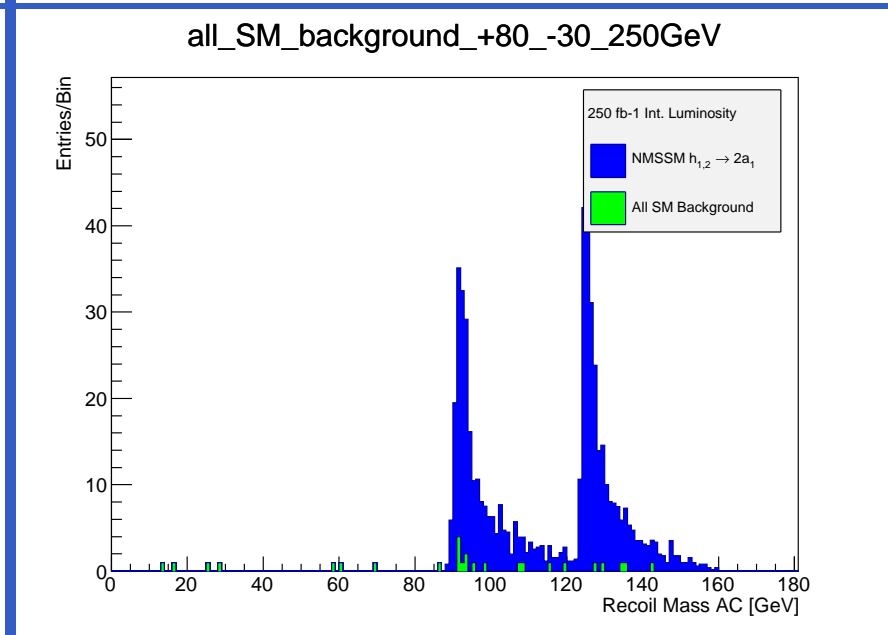
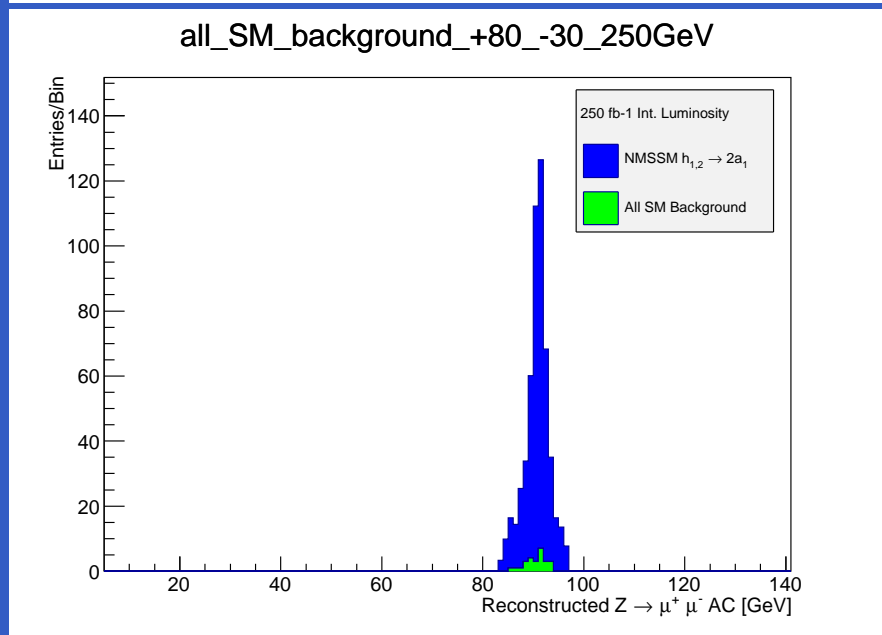
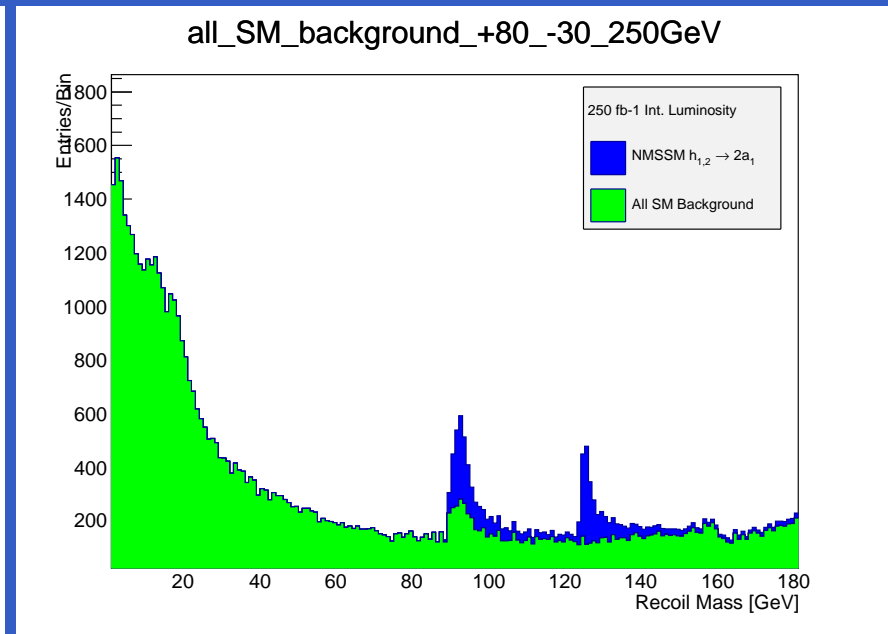
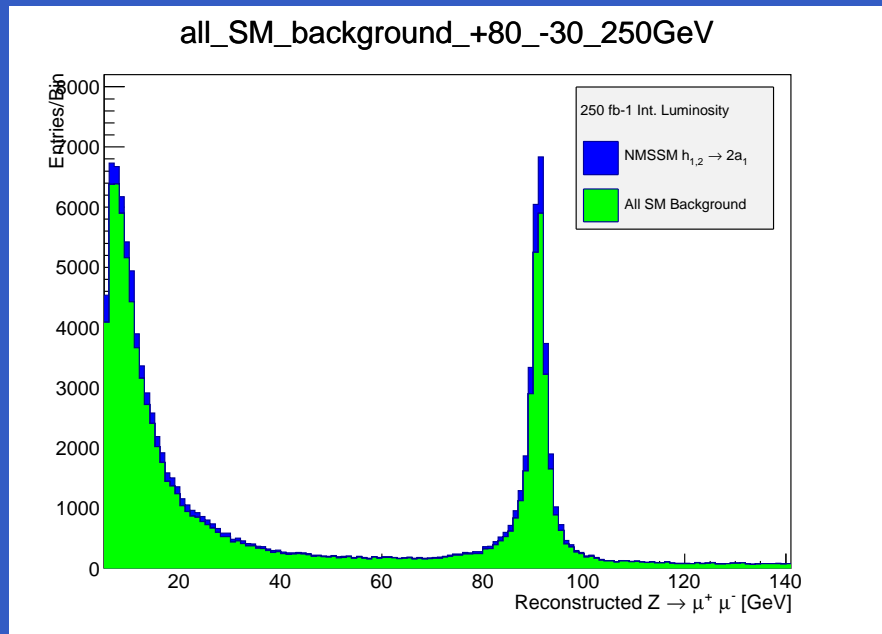
NMSSM Higgs Model and Selection

Parameter	Value	Scalar	Mass [GeV]	Decay	BR [%]
λ	0.3	a_1	10.3	$h_1 \rightarrow 2a_1$	85.4
κ	0.1	h_1	91.6	$h_1 \rightarrow b\bar{b}$	11.9
A_κ	11.6	h_2	124.5	$h_1 \rightarrow \tau^+\tau^-$	1.2
m_A	465 GeV	a_2	465.2	$a_1 \rightarrow \tau^+\tau^-$	73.2
$\tan\beta$	3.1	h_3	469.2	$a_1 \rightarrow 2g$	22.3
μ_{eff}	165 GeV	H^\pm	465.7	$a_1 \rightarrow c\bar{c}$	3.1

Analysis Selection

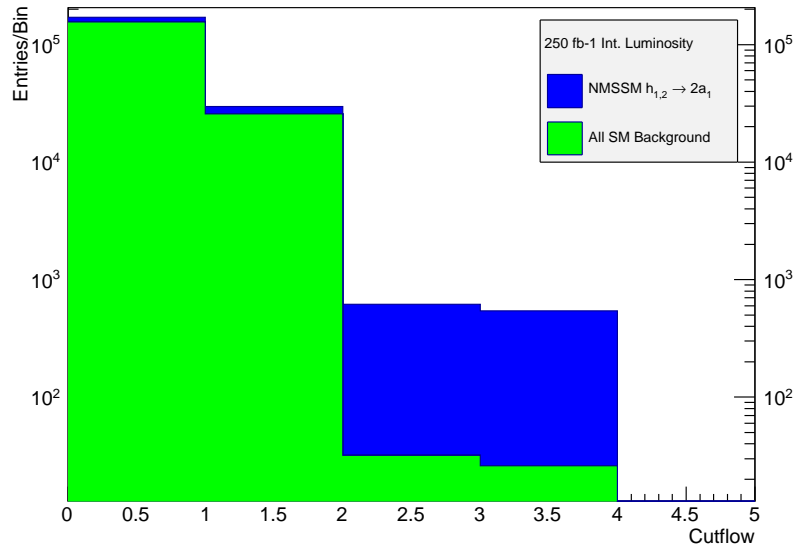
- Require two muons with $pt > 1$ GeV (using MC truth PID for now)
- Reconstruct $Z \rightarrow \mu^+\mu^-$ and calculate recoil mass
- Require reconstructed Z mass within 3σ
- Require four tracks in recoil
- Require zero charge in recoil

$Z \rightarrow \mu^+ \mu^-$ and Recoil Mass

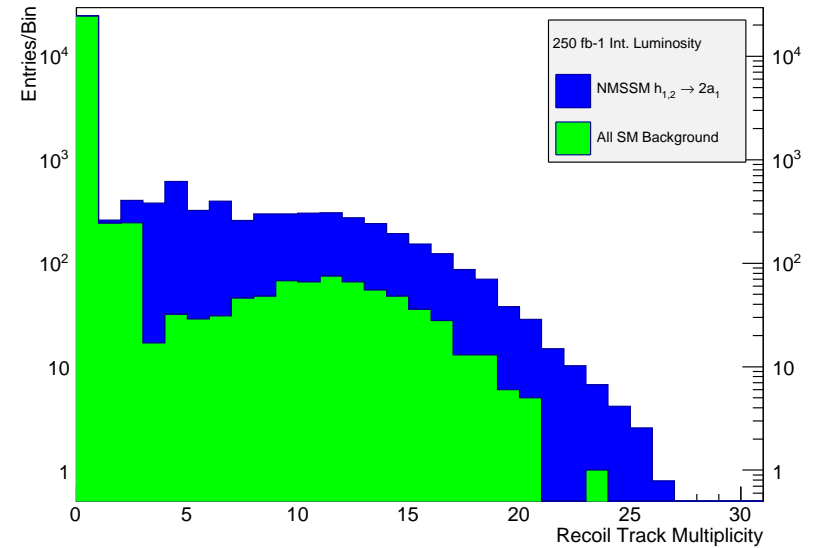


Distributions

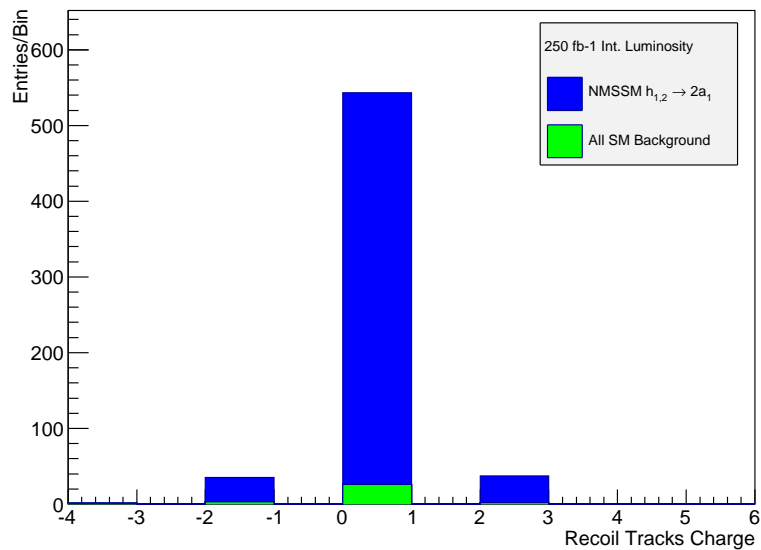
all_SM_background_+80_-30_250GeV



all_SM_background_+80_-30_250GeV



all_SM_background_+80_-30_250GeV



all_SM_background_+80_-30_250GeV

