

# Pre-Snowmass Final Update (nunuw, 6 TeV)

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# Details

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- Channel: `mumu_nunuww`
- Tree: Delphes
- Jet collection: VLCR12N2
- Event selection:
  - `n(leptons) == 0`
  - `n(jets) == 2`
  - `M(nunu) > 200 GeV`
  - $|\cos(\theta_j)| < 0.8$
  - $p_{T, \text{leading jet}} > 100 \text{ GeV}$
- Code: [WW-analysis/analyzeDelphes RecoHistograms.py at main · mumu-multiboson/WW-analysis \(github.com\)](https://github.com/mumu-multiboson/WW-analysis)

# Efficiencies

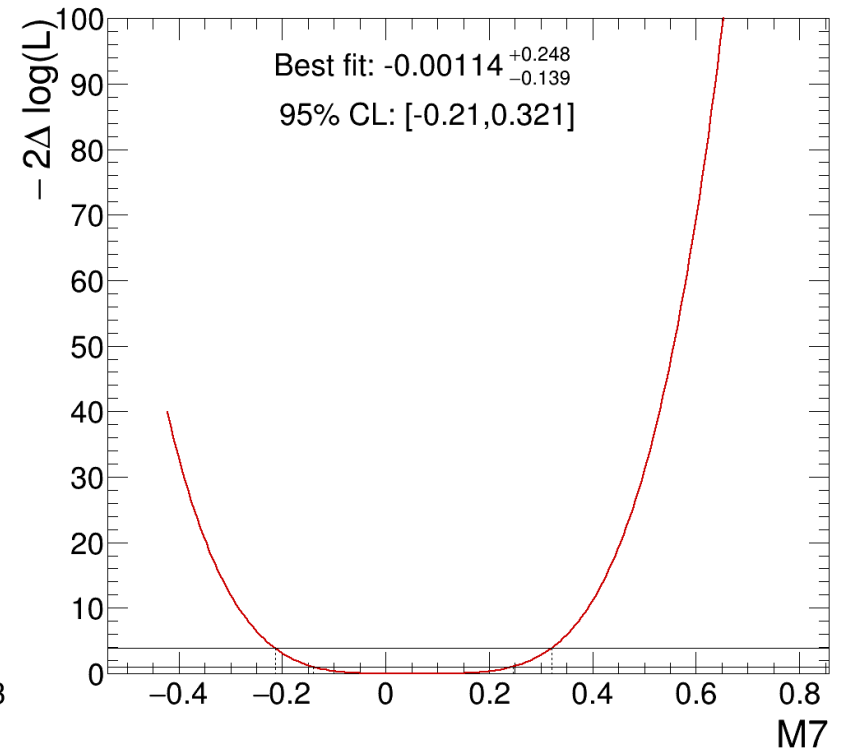
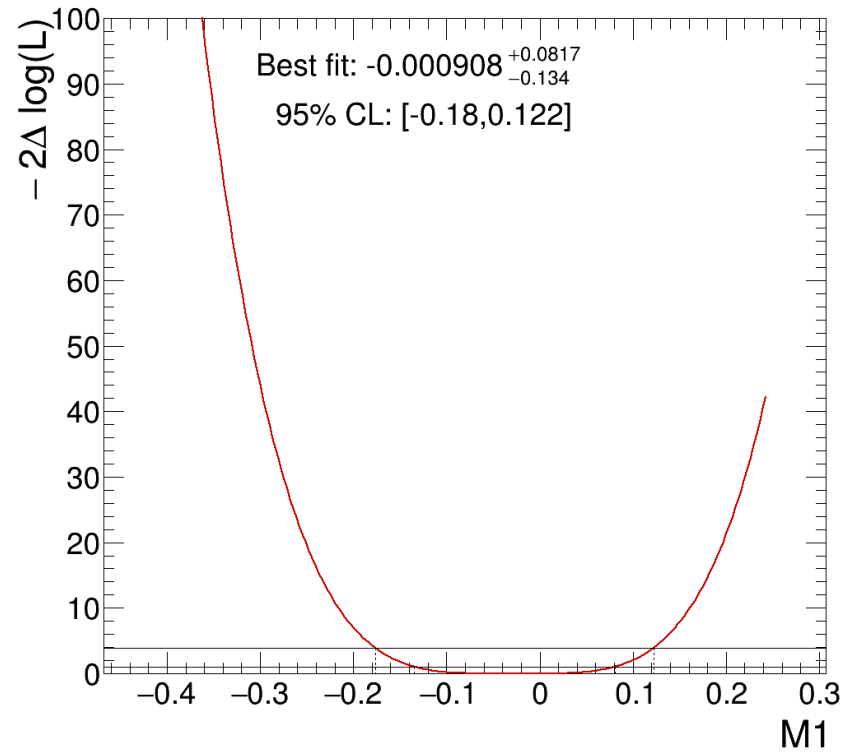
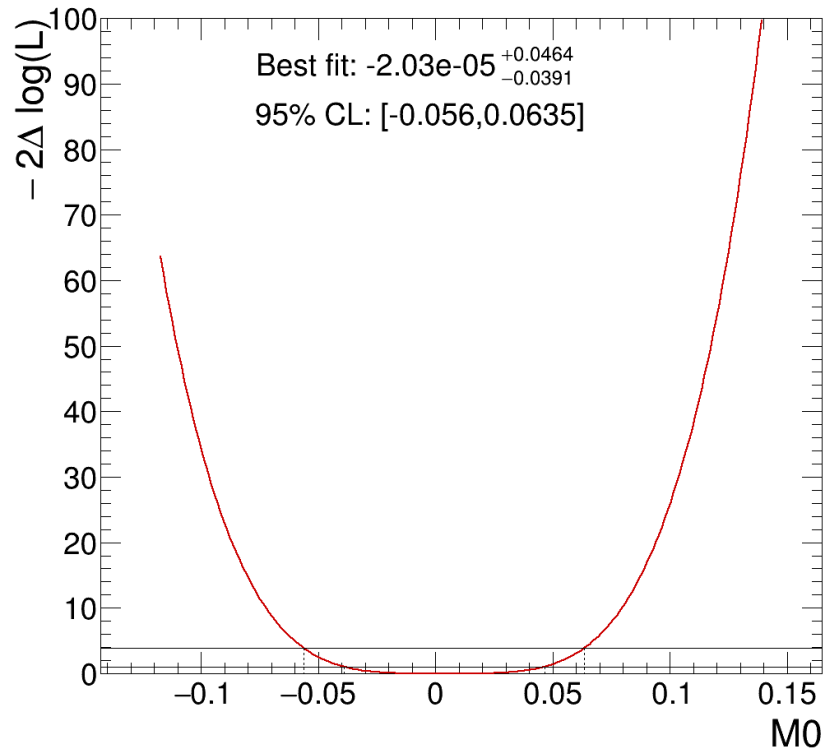
Process	n(leptons) == 0	n(jets) == 2	$M_{miss} > 200 \text{ GeV}$	$ \cos(\theta_j)  < 0.8$	$p_{T,j1} > 100 \text{ GeV}$	Total
T1 QUAD	60.39%	99.42%	96.79%	54.55%	96.69%	30.65%
T1 INT	64.80%	96.94%	98.73%	29.97%	88.11%	16.38%
mumu_nunuww_SM	64.89%	97.63%	99.94%	26.60%	33.02%	5.56%
ggwpwm	63.15%	96.73%	100.00%	23.31%	12.78%	1.82%
zzmumu	25.88%	88.59%	99.71%	27.47%	34.71%	2.18%
wpwmz_ztonunu	72.77%	81.34%	91.82%	25.18%	28.27%	9.79%
wzmunu	62.03%	95.99%	99.99%	25.18%	28.27%	4.24%

# Eft-fun

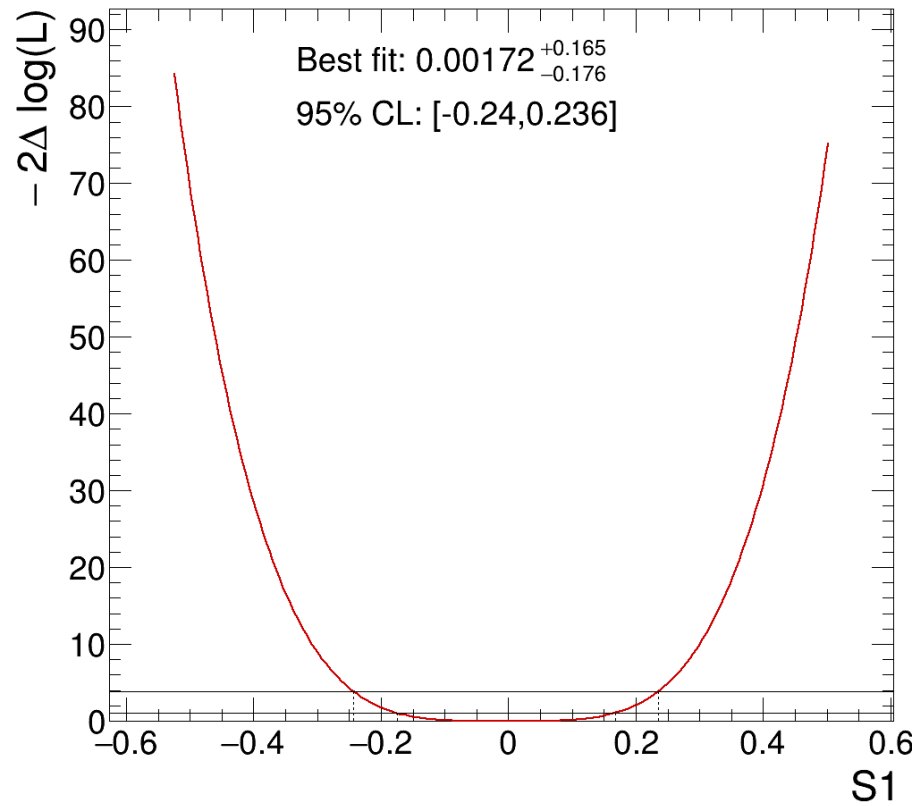
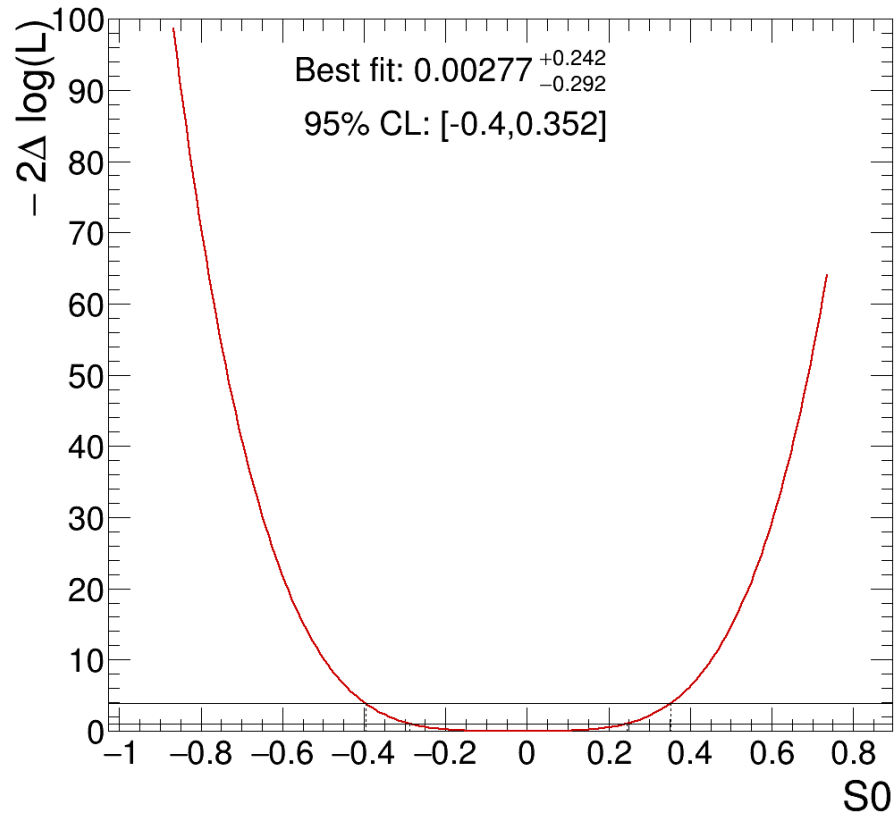
- Right: exclusion limits at 95% CL on each aQGC coefficient.
  - Parametrized using the distribution in  $m(WW)$ .
  - All coupling parameter limits are in  $\text{TeV}^{-4}$ .
- Calculated using Eft-fun framework.
- Code: [mumu-multiboson/eft-fun \(github.com\)](https://github.com/mumu-multiboson/eft-fun)

Parameters	Expected limit	Exp. Limit (CMS)
$f_{M,0}/\Lambda^4$	$[-0.056, 0.064]$	$[-7.7, 7.6]$
$f_{M,1}/\Lambda^4$	$[-0.18, 0.12]$	$[-11, 11]$
$f_{M,7}/\Lambda^4$	$[-0.21, 0.32]$	$[-19, 19]$
$f_{S,0}/\Lambda^4$	$[-0.50, 0.35]$	NA
$f_{S,1}/\Lambda^4$	$[-0.24, 0.24]$	NA
$f_{T,0}/\Lambda^4$	$[-0.014, 0.0051]$	$[-0.6, 0.6]$
$f_{T,1}/\Lambda^4$	$[-0.019, 0.0060]$	$[-0.3, 0.4]$
$f_{T,2}/\Lambda^4$	$[-0.020, 0.0087]$	$[-1.0, 1.2]$

# Limits on M operators $f'/f, f = 1 \text{ TeV}^{-4}$



# Limits on S operators $f'/f$ , $f = 1 \text{ TeV}^{-4}$



# Limits on T operators $f'/f, f = 1 \text{ TeV}^{-4}$

