

Singal Regions

Common Pre-Selection

- ▶ Opposite Sign Requirement • (just kidding...)
- ▶ $m_{\ell\ell} > 10$ GeV

0-Jet

- ▶ $E_T^{miss, trackclj} > 20$ GeV
- ▶ $\Delta\phi(\ell\ell, E_T^{miss}) > \pi/2$
- ▶ $P_T^{\ell\ell} > 30$ GeV
- ▶ $m_{\ell\ell} < 55$ GeV
- ▶ $\Delta\phi_{\ell\ell} < 1.8$

1-Jet

- ▶ $E_{T,rel}^{miss, trackclj} > 25$ GeV •
- ▶ $smt_muon_pt < 4$ GeV
- ▶ MV1 80% 20 GeV b-veto
- ▶ $Z_{\tau\tau}$ -veto (Mtt_TrackHWW_Clj)
- ▶ $m_{\ell\ell} < 55$ GeV
- ▶ $\Delta\phi_{\ell\ell} < 1.8$

SR Splitting

GeV	$10 < p_T^{\ell, sub-lead} < 15$	$15 < p_T^{\ell, sub-lead} < 20$	$20 < p_T^{\ell, sub-lead}$
$10 < m_{\ell\ell} < 30$	SR 0a	SR 0b	SR 0c
$30 < m_{\ell\ell} < 55$	SR 1a	SR 1b	SR 1c

Control Regions

WW Control Regions

0-Jet

- ▶ Upto and including $P_T^{\ell\ell} > 30$ GeV
- ▶ $55 < m_{\ell\ell} < 110$ GeV
- ▶ $\Delta\phi_{\ell\ell} < 2.6$
- ▶ $p_T^\ell > 15$ GeV

1-Jet

- ▶ Upto and including $Z_{\tau\tau}$ -veto
- ▶ $m_{\ell\ell} > 80$ GeV
- ▶ $p_T^\ell > 15$ GeV

Top Control Regions

0-jet (JVSP) **NEW!**

- ▶ Had relied on $E_T^{miss,rel} > 25$ GeV \forall n-jet
- ▶ Proposal: $E_T^{miss,trackclj} > 20$ GeV (i.e. 0-jet cut) ●
- ▶ $\Delta\phi_{\ell\ell} < 2.8$

1-jet

- ▶ Upto and including $smt_muon_pt < 4$ GeV
- ▶ MV1 80% 20 GeV b-tag
- ▶ $Z_{\tau\tau}$ -veto

Control Regions

$Z_{\tau\tau}$ Control Regions

0-Jet

- ▶ Upto and including $N_{jets} == 0$
- ▶ $\Delta\phi_{\ell\ell} > 2.8$
- ▶ $m_{\ell\ell} < 80$ GeV

1-Jet

- ▶ Upto and including MV1 80%
20 GeV b-veto
- ▶ $m_{\ell\ell} < 80$ GeV
- ▶ $m_{\tau\tau} > 80$ GeV

Same Sign Control Regions

- ▶ Upto and including $\Delta\phi_{\ell\ell} < 1.8$,
but require same sign

Control Regions

mCMS Regions srXY_Tag_1j

- ▶ Upto and including SRXY 1J definition, except require b-tag

crTag_1j

- ▶ Upto and including WWCR 1J definition, except require b-tag

tbPass_2j

- ▶ Upto and including TopCR 1J definition, except 2-jets and 2 b-tags ●

tbFail_2j

- ▶ Upto and including TopCR 1J definition, except 2-jets and 1 b-tag ●