

Selection	$2\ell SS + 0\tau_h$	$2\ell SS + 1\tau_h$	$3\ell + 0\tau_h$
Trigger	Single- and double-lepton triggers		Single-, double- and triple-lepton triggers
Lepton $p_T$	$p_T > 25 / 15 \text{ GeV}$	$p_T > 25 / 15 \text{ (e) or } 10 \text{ GeV } (\mu)$	$p_T > 25 / 15 / 10 \text{ GeV}$
Lepton $\eta$	$ \eta  < 2.5 \text{ (e) or } 2.4 \text{ } (\mu)$		$ \eta  < 2.5 \text{ (e) or } 2.4 \text{ } (\mu)$
$\tau_h p_T$	—	$p_T > 20 \text{ GeV}$	—
$\tau_h \eta$	—	$ \eta  < 2.3$	—
Charge requirements	2 same-sign leptons and charge quality requirements		—
		$\sum_{\ell, \tau_h} q = \pm 1$	$\sum_{\ell} q = \pm 1$
Jet multiplicity**		$\geq 3 \text{ jets}$	$\geq 2 \text{ jets}$
b tagging requirements**		$\geq 1 \text{ medium b-tagged jet or } \geq 2 \text{ loose b-tagged jets}$	
Light jet and b tag***		$\geq 1 \text{ light jets, } \geq 1 \text{ medium b-tagged jet}$	
Missing transverse momentum		$E_T^{\text{miss}} LD > 30 \text{ GeV}^{**}$	$p_T^{\text{miss}} LD > 45 \text{ GeV}^{\dagger}$
Dilepton mass		$m_{\ell\ell} > 12 \text{ GeV}^*,  m_{\ell\ell} - m_Z  > 10 \text{ GeV}$	

\* Applied on all pairs of leptons that pass loose selection.

\*\* If events do not pass these cuts, \*\*\* is required.

<sup>†</sup> If the event contains a SFOS lepton pair and  $N_{\text{jet}} \leq 3$ . If the  $N_{\text{jet}} \leq 3$  but there is no SFOS lepton pair, the cut is 30 GeV

<sup>‡</sup> Applied to all SFOS lepton pairs.