

Category	$1\ell + 2\tau_h$	$2\ell_{ss} + 1\tau_h$	$2\ell + 2\tau_h$	$3\ell + 1\tau_h$	$2\ell_{ss}$		$3\ell$	
					tt	ttV	tt	ttV
Leading $\ell$ cone $p_T$	X		X	X		X		X
Trailing $\ell$ cone $p_T$		X		X		X		X
Minimum of $\Delta R(\text{leading } \ell, j)$	X	X	X	X	X	X	X	X
Minimum of $\Delta R(\text{trailing } \ell, j)$		X			X	X	X	X
$\Delta R(\text{leading } \ell, \text{trailing } \ell)$		X		X				
Transverse Mass of leading $\ell$	X	X			X	X	X	X
Transverse Mass of trailing $\ell$		X						
Maximum $ \eta $ of $\ell$ collection		X		X	X	X	X	X
Signal leading $\ell \times$ signal trailing $\ell$			X					
Average of $\Delta R(\text{jj})$	X	X	X					
Number of jets ( $p_T > 25$ GeV)		X		X	X	X	X	X
Number of loose b-jets	X		X					
Mass of leading medium b-jet pair		X						
Mass of leading loose b-jet pair				X				
$E_T^{\text{miss}}$	X	X		X				
res-hTT	X	X						
Hadronic t $p_T$	X	X						
$\mathcal{D}_{\text{Hj}}^{\text{max}}$					X			
$\mathcal{D}_{\text{Hj}}^{\text{thad, max}}$						X		
Leading $\tau_h p_T$	X	X	X	X				
Trailing $\tau_h p_T$	X		X					
Mass of leading $\tau_h +$ trailing $\tau_h$	X		X					
$\Delta R(\text{leading } \tau_h, \text{trailing } \tau_h)$	X		X					
$\cos(\theta) * (\text{leading } \tau_h, \text{trailing } \tau_h)$	X		X					
Minimum of $\Delta R(\text{leading } \tau_h, j)$	X	X		X				
Minimum of $\Delta R(\text{trailing } \tau_h, j)$	X							
Minimum of $\Delta R(\tau_h, j)$			X					
Mass of leading $\ell +$ leading $\tau_h$				X				
Mass of trailing $\ell +$ leading $\tau_h$		X		X				
$\Delta R(\text{leading } \ell, \text{leading } \tau_h)$	X	X						
$\Delta R(\text{trailing } \ell, \text{leading } \tau_h)$		X						
$\Delta R(\ell, \tau_h)$ for same-sign pair of $(\ell, \tau_h)$	X							
Average of $\Delta R(\ell, \tau_h)$			X					
MEM							X	X
Number of variables	17	18	13	12	6	8	6	8