

Variable description	$2\ell SS + 0\tau_h$	$2\ell SS + 1\tau_h$	$3\ell + 0\tau_h$
p_T of jet 1	—	—	✓
p_T of jet 2	—	—	✓
p_T of lepton 1	✓	✓	✓
p_T of lepton 2	✓	✓	✓
p_T of lepton 3	—	—	✓
p_T of tau	—	✓	—
η of lepton 1	✓	✓	—
η of lepton 2	✓	✓	—
η of tau	—	✓	—
ϕ of lepton 1	✓	✓	—
ϕ of lepton 2	✓	✓	—
ϕ of tau	—	✓	—
transverse mass of lepton 1	✓	—	—
transverse mass of lepton 2	✓	—	—
ΔR of lepton 1 to its closest jet	✓	✓	✓
ΔR of lepton 2 to its closest jet	✓	✓	✓
Invariant mass of $(\sum_i p^{lep_i} + \vec{p}_T^{miss} + \sum_{i \leq k} p^{jet_i*})$	✓	✓	✓
$\Delta\eta$ of two jets with highest b score in the laboratory frame	✓	✓	✓
$\Delta\eta$ of the two leptons in frame of two most-likely b jets	✓	✓	—
$\Delta\eta$ of two jets with highest b score in the dilepton system frame	✓	✓	—
$\Delta\eta$ of two jets with highest b score in the ℓ_1 - ℓ_2 system frame	—	—	✓
$\Delta\eta$ of two jets with highest b score in the ℓ_1 - ℓ_3 system frame	—	—	✓
$\Delta\phi$ of the two leptons in frame of two most-likely b jets	—	✓	—
$\Delta\phi$ of two jets with highest b score in the dilepton system frame	—	✓	—
average ΔR among all jets	✓	✓	—
jet multiplicity	✓	✓	—
missing transverse energy	✓	✓	—
p_T^{miss} in the ϕ direction	✓	✓	—
highest BDT score of jet triplet from t	✓	✓	—
Higgs jet tagger	—	✓	—
angle of t \bar{t} and H in t \bar{t} H-system	—	✓	—
angle between two t in t \bar{t} -frame	—	✓	—
$\sqrt{(\eta_{\ell_3} - \eta_{\ell_1})^2 + (\phi_{\ell_3} - \phi_{\ell_1})^2}$	—	—	✓
$\sqrt{(\eta_{\ell_1} - \eta_{\ell_2})^2 + (\phi_{\ell_1} - \phi_{\ell_2})^2}$	—	—	✓
$\sqrt{(\eta_{\ell_2} - \eta_{\ell_3})^2 + (\phi_{\ell_2} - \phi_{\ell_3})^2}$	—	—	✓
$\eta_{jet1} - \eta_{jet2}$	—	—	✓
$p_T^{jet1} + p_T^{jet2} + p_T^{jet3} + p_T^{miss}$	—	—	✓
Total number of variables	19	25	16

* k = 6 (4) in the final state $2\ell SS + 0\tau_h$ ($2\ell SS + 1\tau_h$ and $3\ell + 0\tau_h$)