Selection step	$2\ell\mathrm{OS}+1\tau_\mathrm{h}$	$4\ell+0\tau_\mathrm{h}$
Targeted $\mathrm{t\bar{t}H}$ decays	$\mathrm{t}\to\mathrm{b}\ell\nu$, $\mathrm{t}\to\mathrm{bqq}'$ with $\mathrm{H}\to\tau^+\tau^-\to\ell\nu\nu\tau_\mathrm{h}\nu$	$\mathrm{t}\to\mathrm{b}\ell\nu$, $\mathrm{t}\to\mathrm{b}\ell\nu$ with $\mathrm{H}\to\mathrm{WW}\to\ell\nu\ell\nu$ $\mathrm{t}\to\mathrm{b}\ell\nu$, $\mathrm{t}\to\mathrm{b}\ell\nu$ with $\mathrm{H}\to\mathrm{ZZ}\to\ell\ell\mathrm{qq}'$ or $\ell\ell\nu\nu$
Trigger	Single- and double-lepton triggers	Single-, double- and triple-lepton triggers
Lepton p_T	$p_\mathrm{T}>25$ / 15 GeV (e) or 10 GeV (μ)	$p_\mathrm{T}>25$ / 15 / 15 / 10 GeV
Lepton η	$\lvert\eta\rvert<2.5$ (e) or 2.4 (μ)	
τ_h p_T	$p_\mathrm{T}>20$ GeV	—
τ_h η	$\lvert\eta\rvert<2.3$	—
τ_h identification	tight	—
Charge requirements	$\sum_\ell q=0$ and $\sum_{\ell,\tau_\mathrm{h}} q=\pm1$	$\sum_\ell q=0$
Multiplicity of central jets	$\geq$3 jets	$\geq$2 jets
b tagging requirements	$\geq$1 tight b-tagged jet or $\geq$2 loose b-tagged jets	
Missing transverse momentum	$L_\mathrm{D}>30$ GeV[†]	$L_\mathrm{D}>0$ / 30 / 45 GeV[‡]
Dilepton invariant mass	$m_{\ell\ell}>12$ GeV	$\lvert m_{\ell\ell}-m_\mathrm{Z}\rvert>10$ GeV[§] and $m_{\ell\ell}>12$ GeV
Four-lepton invariant mass	—	$m_{4\ell}>140$ GeV[¶]

[†] Only applied to events containing two electrons.
[‡] A complete description of this requirement can be found in the main text.
[§] Applied to all SFOS lepton pairs.
[¶] If the event contains two SFOS pairs of leptons passing the loose lepton selection criteria.