

Category	Selection	Observables $\vec{x}$ for fitting
Scheme 1		
Untagged	none below	$\mathcal{D}_{\text{bkg}}$
VBF-1jet	$\mathcal{D}_{1\text{jet}}^{\text{VBF}} > 0.7$	$\mathcal{D}_{\text{bkg}}$
VBF-2jet	$\mathcal{D}_{2\text{jet}}^{\text{VBF}} > 0.5$	$\mathcal{D}_{\text{bkg}}, \mathcal{D}_{2\text{jet}}^{\text{VBF}}, \mathcal{D}_{0-}^{\text{ggH}}, \mathcal{D}_{\text{CP}}^{\text{ggH}}$
VH-leptonic	see Sec. ??	$\mathcal{D}_{\text{bkg}}$
VH-hadronic	$\mathcal{D}_{2\text{jet}}^{\text{VH}} > 0.5$	$\mathcal{D}_{\text{bkg}}$
$\bar{t}t$ H-leptonic	see Sec. ??	$\mathcal{D}_{\text{bkg}}, \mathcal{D}_{0-}^{\bar{t}t\text{H}}$
$\bar{t}t$ H-hadronic	see Sec. ??	$\mathcal{D}_{\text{bkg}}, \mathcal{D}_{0-}^{\bar{t}t\text{H}}$
Scheme 2		
Untagged	none below	$\mathcal{D}_{\text{bkg}}, \mathcal{D}_{0-}^{\text{dec}}, \mathcal{D}_{0\text{h}+}^{\text{dec}}, \mathcal{D}_{\Lambda 1}^{\text{dec}}, \mathcal{D}_{\Lambda 1}^{\text{Z}\gamma, \text{dec}}, \mathcal{D}_{\text{CP}}^{\text{dec}}, \mathcal{D}_{\text{int}}^{\text{dec}}$
Boosted	$p_{\text{T}}^{4\ell} > 120 \text{ GeV}$	$\mathcal{D}_{\text{bkg}}, p_{\text{T}}^{4\ell}$
VBF-1jet	$\mathcal{D}_{1\text{jet}}^{\text{VBF}} > 0.7$	$\mathcal{D}_{\text{bkg}}, p_{\text{T}}^{4\ell}$
VBF-2jet	$\mathcal{D}_{2\text{jet}}^{\text{VBF}} > 0.5$	$\mathcal{D}_{\text{bkg}}, \mathcal{D}_{0-}^{\text{VBF+dec}}, \mathcal{D}_{0\text{h}+}^{\text{VBF+dec}}, \mathcal{D}_{\Lambda 1}^{\text{VBF+dec}}, \mathcal{D}_{\Lambda 1}^{\text{Z}\gamma, \text{VBF+dec}}, \mathcal{D}_{\text{CP}}^{\text{VBF}}, \mathcal{D}_{\text{int}}^{\text{VBF}}$
VH-leptonic	see Sec. ??	$\mathcal{D}_{\text{bkg}}, p_{\text{T}}^{4\ell}$
VH-hadronic	$\mathcal{D}_{2\text{jet}}^{\text{VH}} > 0.5$	$\mathcal{D}_{\text{bkg}}, \mathcal{D}_{0-}^{\text{VH+dec}}, \mathcal{D}_{0\text{h}+}^{\text{VH+dec}}, \mathcal{D}_{\Lambda 1}^{\text{VH+dec}}, \mathcal{D}_{\Lambda 1}^{\text{Z}\gamma, \text{VH+dec}}, \mathcal{D}_{\text{CP}}^{\text{VH}}, \mathcal{D}_{\text{int}}^{\text{VH}}$