| Variable | $\mathrm{e} \mu$ | $\mathrm{e} \tau_{h}$ | $\mu \tau_{h}$ | $\tau_{h} \tau_{h}$ |
| :---: | :---: | :---: | :---: | :---: |
| $m_{\tau \tau}$ | $\times$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |
| $m_{v i s}$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |
| Collinear mass | $\times$ | $\checkmark$ | $\checkmark$ | $\times$ |
| $D_{\zeta}$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\times$ |
| $\Delta \eta$ between lepton and $\tau_{\mathrm{h}}$ | $\times$ | $\checkmark$ | $\checkmark$ | $\times$ |
| Total transverse mass | $\checkmark$ | $\times$ | $\times$ | $\times$ |
| Di- $\tau p_{\mathrm{T}}$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |
| Electron $p_{\mathrm{T}}$ | $\checkmark$ | $\times$ | $\times$ | $\times$ |
| Muon $p_{\mathrm{T}}$ | $\checkmark$ | $\times$ | $\times$ | $\times$ |
| $p_{\mathrm{T}}$ of leading $\tau_{\mathrm{h}}$ | $\times$ | $\times$ | $\times$ | $\checkmark$ |
| $p_{\mathrm{T}}$ of trailing $\tau_{\mathrm{h}}$ | $\times$ | $\times$ | $\times$ | $\checkmark$ |
| Transverse mass | $\times$ | $\checkmark$ | $\checkmark$ | $\times$ |
| Number of b-jets | $\checkmark$ | $\times$ | $\times$ | $\checkmark$ |
| $p_{\mathrm{T}}$ of leading b-jet | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |
| $p_{\mathrm{T}}$ of trailing b-jet | $\times$ | $\checkmark$ | $\checkmark$ | $\times$ |
| B-tag score for leading b-jet | $\times$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |
| $\Delta \eta$ between di- $\tau p_{\mathrm{T}}$ and leading b-jet | $\times$ | $\checkmark$ | $\checkmark$ | $\times$ |
| B-tag score for trailing b-jet | $\times$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |
| Number of jets | $\checkmark$ | $\times$ | $\times$ | $\checkmark$ |
| $p_{\mathrm{T}}$ of leading jet | $\checkmark$ | $\times$ | $\times$ | $\checkmark$ |
| $p_{\mathrm{T}}$ of trailing jet | $\checkmark$ | $\times$ | $\times$ | $\checkmark$ |
| Di-jet invariant mass | $\times$ | $\times$ | $\times$ | $\checkmark$ |
| Di-jet $\Delta \eta$ | $\checkmark$ |  |  |  |
| $p_{\mathrm{T}}^{\text {miss }}$ | $\times$ | $\times$ | $\checkmark$ |  |

