| syst. source / bin | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Jet energy scale | ${ }_{-0.5}^{+2.7}$ | $\begin{array}{r} -1.9 \\ -1.0 \end{array}$ | $\begin{aligned} & -0.1 \\ & -0.5 \end{aligned}$ | $\begin{array}{r} +2.6 \\ -1.4 \end{array}$ | $\begin{aligned} & +0.8 \\ & -1.5 \end{aligned}$ | $\begin{aligned} & -1.4 \\ & +0.3 \end{aligned}$ | $\begin{aligned} & +2.3 \\ & +0.8 \end{aligned}$ | $\begin{aligned} & +0.3 \\ & { }_{-3.8} \end{aligned}$ | $\begin{aligned} & -1.8 \\ & -1.0 \end{aligned}$ | $\begin{aligned} & -1.9 \\ & +2.6 \end{aligned}$ | $\begin{aligned} & -2.7 \\ & -1.0 \end{aligned}$ | $\begin{aligned} & +3.8 \\ & -1.8 \end{aligned}$ | $\begin{aligned} & +2.1 \\ & +3.0 \end{aligned}$ | $\begin{aligned} & +1.7 \\ & +1.2 \end{aligned}$ | $\begin{aligned} & +0.6 \\ & { }_{-1.1} \end{aligned}$ | ${ }_{-5.0}^{+1.5}$ |
| Jet energy resolution | $\begin{aligned} & +2.1 \\ & +0.4 \end{aligned}$ | $\begin{aligned} & -0.6 \\ & -0.8 \end{aligned}$ | $\begin{aligned} & -1.3 \\ & -0.5 \end{aligned}$ | $\begin{aligned} & +0.0 \\ & { }_{-0.0} \end{aligned}$ | $\begin{aligned} & -0.8 \\ & -0.2 \end{aligned}$ | $\begin{aligned} & -1.4 \\ & -0.6 \end{aligned}$ | $\begin{aligned} & +1.7 \\ & +1.5 \end{aligned}$ | $\begin{aligned} & -3.0 \\ & +0.4 \end{aligned}$ | $\begin{aligned} & -1.4 \\ & -1.4 \end{aligned}$ | $\begin{aligned} & +0.2 \\ & +1.2 \end{aligned}$ | $\begin{aligned} & +0.0 \\ & { }_{-1.7} \end{aligned}$ | $\begin{aligned} & -0.1 \\ & +3.5 \end{aligned}$ | $\begin{aligned} & +2.7 \\ & +1.0 \end{aligned}$ | $\begin{aligned} & +1.8 \\ & +1.2 \end{aligned}$ | $\begin{aligned} & -2.9 \\ & -0.5 \end{aligned}$ | $\begin{aligned} & +1.9 \\ & -0.4 \end{aligned}$ |
| Kin. reconstruction | $\begin{aligned} & +0.0 \\ & { }_{-0.0}^{+} \end{aligned}$ | $\begin{aligned} & +0.0 \\ & { }_{-0.0} \end{aligned}$ | $\begin{aligned} & -0.0 \\ & +0.0 \end{aligned}$ | $\begin{aligned} & -0.0 \\ & +0.0 \end{aligned}$ | $\begin{aligned} & -0.0 \\ & +0.0 \end{aligned}$ | $\begin{aligned} & -0.0 \\ & +0.0 \end{aligned}$ | $\begin{aligned} & -0.0 \\ & +0.0 \end{aligned}$ | $\begin{aligned} & -0.0 \\ & +0.0 \end{aligned}$ | $\begin{aligned} & +0.0 \\ & +0.0 \end{aligned}$ | $\begin{aligned} & -0.0 \\ & +0.0 \end{aligned}$ | $\begin{aligned} & +0.0 \\ & { }_{-0.0} \end{aligned}$ | $\begin{aligned} & -0.0 \\ & +0.0 \end{aligned}$ | $\begin{aligned} & +0.0 \\ & { }_{-0.0} \end{aligned}$ | $\begin{aligned} & +0.0 \\ & { }_{-0.0} \end{aligned}$ | $\begin{aligned} & -0.0 \\ & +0.0 \end{aligned}$ | $\begin{aligned} & +0.0 \\ & { }_{-0.0} \end{aligned}$ |
| Pileup | $\begin{aligned} & +0.0 \\ & +0.0 \end{aligned}$ | $\begin{aligned} & +0.1 \\ & { }_{-0.2} \end{aligned}$ | $\begin{aligned} & -0.2 \\ & +0.3 \end{aligned}$ | $\begin{aligned} & -0.3 \\ & +0.1 \end{aligned}$ | $\begin{aligned} & -0.1 \\ & +0.1 \end{aligned}$ | $\begin{aligned} & +0.0 \\ & -0.1 \end{aligned}$ | $\begin{aligned} & -0.4 \\ & +0.5 \end{aligned}$ | $\begin{aligned} & -0.4 \\ & +0.4 \end{aligned}$ | $\begin{aligned} & +0.1 \\ & { }_{-0.1} \end{aligned}$ | $\begin{aligned} & +0.4 \\ & -0.5 \end{aligned}$ | $\begin{aligned} & -0.4 \\ & +0.5 \end{aligned}$ | $\begin{aligned} & -0.5 \\ & +0.5 \end{aligned}$ | $\begin{aligned} & +0.2 \\ & { }_{-0.1} \end{aligned}$ | $\begin{aligned} & +0.0 \\ & { }_{-0.0} \end{aligned}$ | $\begin{aligned} & +0.2 \\ & { }_{-0.1} \end{aligned}$ | $\begin{aligned} & -0.8 \\ & +0.9 \end{aligned}$ |
| Trigger | $\begin{aligned} & +0.2 \\ & -0.2 \end{aligned}$ | $\begin{aligned} & +0.2 \\ & { }_{-0.2} \end{aligned}$ | $\begin{aligned} & +0.1 \\ & { }_{-0.1} \end{aligned}$ | $\begin{aligned} & +0.2 \\ & { }_{-0.2} \end{aligned}$ | $\begin{aligned} & +0.1 \\ & { }_{-0.1} \end{aligned}$ | $\begin{aligned} & +0.1 \\ & -0.1 \end{aligned}$ | $\begin{aligned} & +0.1 \\ & { }_{-0.1} \end{aligned}$ | $\begin{aligned} & +0.1 \\ & { }_{-0.1} \end{aligned}$ | $\begin{aligned} & -0.0 \\ & +0.0 \end{aligned}$ | $\begin{aligned} & -0.1 \\ & +0.1 \end{aligned}$ | $\begin{aligned} & +0.1 \\ & { }_{-0.1} \end{aligned}$ | $\begin{aligned} & +0.1 \\ & { }_{-0.1} \end{aligned}$ | $\begin{aligned} & -0.4 \\ & +0.5 \end{aligned}$ | $\begin{aligned} & -0.3 \\ & +0.3 \end{aligned}$ | $\begin{aligned} & -0.4 \\ & +0.5 \end{aligned}$ | $\begin{aligned} & -0.2 \\ & +0.2 \end{aligned}$ |
| Background $\mathrm{Z} / \gamma^{*}$ | $\begin{aligned} & +0.0 \\ & +0.0 \end{aligned}$ | $\begin{aligned} & +0.4 \\ & -0.4 \end{aligned}$ | $\begin{aligned} & +0.4 \\ & { }_{-0.4} \end{aligned}$ | $\begin{aligned} & +0.2 \\ & { }_{-0.2} \end{aligned}$ | $\begin{aligned} & -0.4 \\ & +0.5 \end{aligned}$ | $\begin{aligned} & +0.1 \\ & { }_{-0.1} \end{aligned}$ | $\begin{aligned} & +0.2 \\ & { }_{-0.2}^{+} \end{aligned}$ | $\begin{aligned} & +0.4 \\ & { }_{-0.4} \end{aligned}$ | $\begin{aligned} & -0.2 \\ & +0.2 \end{aligned}$ | $\begin{aligned} & +0.1 \\ & -0.1 \end{aligned}$ | $\begin{aligned} & +0.3 \\ & { }_{-0.4}^{+} \end{aligned}$ | $\begin{aligned} & +0.6 \\ & -0.6 \end{aligned}$ | $\begin{aligned} & -0.6 \\ & +0.7 \end{aligned}$ | $\begin{aligned} & -0.2 \\ & +0.1 \end{aligned}$ | $\begin{aligned} & +0.3 \\ & { }_{-0.3}^{+0} \end{aligned}$ | $\begin{aligned} & +0.5 \\ & -0.5 \end{aligned}$ |
| Background other | $\begin{aligned} & +0.0 \\ & -0.0 \end{aligned}$ | $\begin{aligned} & +0.2 \\ & { }_{-0.2} \end{aligned}$ | $\begin{aligned} & -0.1 \\ & +0.1 \end{aligned}$ | $\begin{aligned} & -0.2 \\ & +0.1 \end{aligned}$ | $\begin{aligned} & +0.0 \\ & { }_{-0.1} \end{aligned}$ | $\begin{aligned} & -0.1 \\ & +0.0 \end{aligned}$ | $\begin{aligned} & -0.2 \\ & +0.3 \end{aligned}$ | $\begin{aligned} & -0.9 \\ & +0.9 \end{aligned}$ | $\begin{aligned} & +0.2 \\ & -0.2 \end{aligned}$ | $\begin{aligned} & -0.1 \\ & +0.2 \end{aligned}$ | $\begin{aligned} & +0.3 \\ & -0.4 \end{aligned}$ | $\begin{aligned} & -0.4 \\ & +0.5 \end{aligned}$ | $\begin{aligned} & +0.0 \\ & { }_{-0.0} \end{aligned}$ | $\begin{aligned} & -0.0 \\ & +0.1 \end{aligned}$ | $\begin{aligned} & +0.1 \\ & { }_{-0.0} \end{aligned}$ | $\begin{aligned} & -0.2 \\ & +0.2 \end{aligned}$ |
| b tagging | $\begin{aligned} & +0.5 \\ & { }_{-0.5} \end{aligned}$ | $\begin{aligned} & +0.9 \\ & -0.6 \end{aligned}$ | $\begin{array}{r} +1.0 \\ -1.2 \end{array}$ | $\begin{aligned} & +0.7 \\ & { }_{-0.4} \end{aligned}$ | $\begin{aligned} & +0.7 \\ & { }_{-0.9} \end{aligned}$ | $\begin{aligned} & +0.4 \\ & -0.4 \end{aligned}$ | $\begin{aligned} & +0.4 \\ & -0.2 \end{aligned}$ | $\begin{array}{r} +1.6 \\ -1.3 \end{array}$ | $\begin{array}{r} +0.9 \\ -1.2 \end{array}$ | $\begin{aligned} & +0.5 \\ & -0.8 \end{aligned}$ | $\begin{aligned} & +0.3 \\ & -0.4 \end{aligned}$ | $\begin{aligned} & +0.6 \\ & { }_{-0.3} \end{aligned}$ | $\begin{aligned} & +1.2 \\ & -0.1 \end{aligned}$ | $\begin{aligned} & +1.0 \\ & -0.7 \end{aligned}$ | $\begin{array}{r} +0.6 \\ -1.3 \end{array}$ | $\begin{aligned} & +0.8 \\ & -1.4 \end{aligned}$ |
| Int. luminosity | $\begin{aligned} & +0.1 \\ & { }_{-0.1} \end{aligned}$ | $\begin{aligned} & +0.1 \\ & { }_{-0.1} \end{aligned}$ | $\begin{aligned} & -0.0 \\ & +0.0 \end{aligned}$ | $\begin{aligned} & -0.0 \\ & +0.0 \end{aligned}$ | $\begin{aligned} & -0.1 \\ & +0.1 \end{aligned}$ | $\begin{aligned} & -0.1 \\ & +0.1 \end{aligned}$ | $\begin{aligned} & -0.1 \\ & +0.1 \end{aligned}$ | $\begin{aligned} & -0.0 \\ & +0.0 \end{aligned}$ | $\begin{aligned} & -0.1 \\ & +0.1 \end{aligned}$ | $\begin{aligned} & -0.1 \\ & +0.1 \end{aligned}$ | $\begin{aligned} & +0.0 \\ & { }_{-0.0} \end{aligned}$ | $\begin{aligned} & +0.0 \\ & { }_{-0.0} \end{aligned}$ | $\begin{aligned} & +0.2 \\ & -0.2 \end{aligned}$ | $\begin{aligned} & +0.1 \\ & -0.1 \end{aligned}$ | $\begin{aligned} & -0.1 \\ & +0.1 \end{aligned}$ | $\begin{aligned} & +0.1 \\ & -0.1 \end{aligned}$ |
| $m_{\mathrm{t}}$ | $\begin{aligned} & +0.7 \\ & +0.1 \end{aligned}$ | $\begin{aligned} & -1.0 \\ & +0.9 \end{aligned}$ | $\begin{aligned} & +0.3 \\ & -0.2 \end{aligned}$ | $\begin{aligned} & +2.1 \\ & -3.3 \end{aligned}$ | $\begin{aligned} & +0.4 \\ & { }_{-0.6} \end{aligned}$ | $\begin{aligned} & -0.6 \\ & +1.0 \end{aligned}$ | $\begin{aligned} & +0.4 \\ & +0.1 \end{aligned}$ | $\begin{aligned} & +2.2 \\ & -2.9 \end{aligned}$ | $\begin{aligned} & +0.1 \\ & { }_{-0.7} \end{aligned}$ | $\begin{aligned} & -0.9 \\ & +1.1 \end{aligned}$ | $\begin{aligned} & -0.1 \\ & -0.4 \end{aligned}$ | $\begin{aligned} & +2.8 \\ & -2.2 \end{aligned}$ | $\begin{aligned} & +0.3 \\ & { }_{-0.1} \end{aligned}$ | $\begin{aligned} & -0.5 \\ & +0.6 \end{aligned}$ | $\begin{aligned} & -0.3 \\ & -1.2 \end{aligned}$ | $\begin{aligned} & +4.2 \\ & -4.3 \end{aligned}$ |
| $\mu_{\mathrm{f}}, \mu_{\mathrm{r}}$ | $\begin{aligned} & -2.7 \\ & +4.2 \end{aligned}$ | $\begin{aligned} & -4.2 \\ & -2.2 \end{aligned}$ | $\begin{aligned} & +0.2 \\ & +0.7 \end{aligned}$ | $\begin{aligned} & -6.7 \\ & +4.9 \end{aligned}$ | $\begin{aligned} & +0.0 \\ & { }_{-0.8} \end{aligned}$ | $\begin{array}{r} +0.9 \\ -1.7 \end{array}$ | $\begin{aligned} & +4.6 \\ & +0.2 \end{aligned}$ | $\begin{aligned} & -2.2 \\ & +1.7 \end{aligned}$ | $\begin{array}{r} +1.9 \\ -3.4 \end{array}$ | $\begin{aligned} & +1.9 \\ & +0.9 \end{aligned}$ | $\begin{aligned} & -3.5 \\ & +2.4 \end{aligned}$ | $\begin{aligned} & +3.1 \\ & +5.9 \end{aligned}$ | $\begin{aligned} & -1.4 \\ & +2.1 \end{aligned}$ | $\begin{aligned} & +3.3 \\ & { }_{-1.2}^{+} \end{aligned}$ | $\begin{aligned} & -1.3 \\ & +0.8 \end{aligned}$ | $\begin{aligned} & +1.5 \\ & { }_{-4.4} \end{aligned}$ |
| Matching threshold | $\begin{aligned} & +2.8 \\ & +0.9 \end{aligned}$ | $\begin{aligned} & -2.0 \\ & -2.0 \end{aligned}$ | $\begin{aligned} & +1.5 \\ & +3.8 \end{aligned}$ | $\begin{aligned} & -5.7 \\ & -5.0 \end{aligned}$ | $\begin{aligned} & -0.6 \\ & +2.3 \end{aligned}$ | $\begin{aligned} & -2.6 \\ & -2.0 \end{aligned}$ | ${ }_{-0.5}^{+2.6}$ | $\begin{aligned} & +1.4 \\ & +2.1 \end{aligned}$ | $\begin{array}{r} -1.5 \\ -1.4 \end{array}$ | $\begin{aligned} & +2.6 \\ & +0.8 \end{aligned}$ | $\begin{aligned} & +0.4 \\ & +1.5 \end{aligned}$ | $\begin{aligned} & +4.1 \\ & +3.7 \end{aligned}$ | $\begin{aligned} & -0.2 \\ & -0.3 \end{aligned}$ | $\begin{aligned} & +0.4 \\ & { }_{-1.6} \end{aligned}$ | $\begin{aligned} & -1.5 \\ & +3.0 \end{aligned}$ | $\begin{aligned} & +2.1 \\ & -8.9 \end{aligned}$ |
| PDFs | $\begin{aligned} & +0.6 \\ & -0.7 \end{aligned}$ | $\begin{aligned} & +0.1 \\ & { }_{-0.1} \end{aligned}$ | $\begin{aligned} & +0.2 \\ & -0.2 \end{aligned}$ | $\begin{aligned} & +0.2 \\ & -0.2 \end{aligned}$ | ${ }_{-0.2}^{+0.2}$ | $\begin{aligned} & +0.1 \\ & { }_{-0.1} \end{aligned}$ | $\begin{aligned} & +0.1 \\ & { }_{-0.1} \end{aligned}$ | $\begin{aligned} & +0.3 \\ & { }_{-0.3} \end{aligned}$ | $\begin{aligned} & +0.5 \\ & { }_{-0.4} \end{aligned}$ | $\begin{aligned} & +0.3 \\ & -0.3 \end{aligned}$ | $\begin{aligned} & +0.2 \\ & -0.2 \end{aligned}$ | $\begin{aligned} & +0.5 \\ & -0.5 \end{aligned}$ | $\begin{aligned} & +0.6 \\ & { }_{-0.6} \end{aligned}$ | $\begin{aligned} & +0.2 \\ & { }_{-0.1} \end{aligned}$ | $\begin{aligned} & +0.3 \\ & -0.3 \end{aligned}$ | $\begin{aligned} & +0.4 \\ & -0.4 \end{aligned}$ |
| Hadronization | $-3.3$ | +0.4 | $+2.7$ | $-5.9$ | +1.7 | $-1.8$ | $-2.4$ | $+2.2$ | +1.5 | +0.6 | $-5.2$ | $-1.1$ | $+0.0$ | $+4.9$ | +1.7 | $-4.3$ |
| Hard scattering | $+2.1$ | $-3.2$ | $+0.5$ | +3.3 | +0.1 | $-0.1$ | +2.9 | $-5.0$ | -0.6 | +1.4 | $+2.6$ | $-9.4$ | +4.4 | $-3.4$ | $-5.0$ | -10.5 |

