| source / bin | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| trigger ( $\eta$ ) | -0 | -0 | -0.3 | . 7 | -0.2 | -0.2 | -0.2 | 0. 4 | 0.0 | -0.1 | -0.2 | $+0.3$ | $-0.2$ | -0.1 | -0.3 | $+0.9$ | $-0.3$ | -0.2 | -0.2 | $+0.5$ | 0.0 | -0.1 | $-0.3$ | $+0.2$ | -0.2 | 0.0 | -0.4 | $+0.7$ | $-0.3$ | -0.2 | -0.2 | $+0.6$ | 0.0 | -0.1 | -0.3 | +0.2 |
|  | +0.3 | +0.2 | $+0.3$ | -0.6 | $+0.2$ | $+0.2$ | +0.2 | -0.4 | 0.0 | +0.1 | $+0.2$ | -0.3 | +0.2 | $+0.1$ | +0.3 | -0.9 | $+0.3$ | +0.2 | $+0.2$ | -0.5 | 0.0 | +0.1 | +0.3 | -0.2 | $+0.2$ | 0.0 | $+0.4$ | -0.7 | +0.3 | $+0.2$ | +0.2 | -0.6 | 0.0 | +0.1 | $+0.3$ | -0.3 |
| non-tṫ background | -0.9 | -0.7 | -1.8 | -3.9 | -0.2 | -0.2 | $+0.2$ | 0.0 | +0.6 | $+0.3$ | $+0.7$ | -0.3 | $+0.7$ | +1.1 | +1.2 | $-3.7$ | 0.0 | $+0.5$ | +0.5 | $+0.3$ | $+0.8$ | $+0.8$ | $+0.6$ | $+0.2$ | $+2.9$ | +2.4 | $+3.0$ | +0.6 | +0.9 | $+0.5$ | +0.3 | +1.0 | +1.2 | $+0.4$ | +1.3 | -0.6 |
|  | +1.1 | $+0.5$ | $+2.0$ | +3.7 | $+0.1$ | $+0.1$ | -0.3 | $-0.2$ | -0.5 | -0.3 | -0.6 | $+0.3$ | -0.6 | -0.8 | $-0.8$ | +3.4 | -0.1 | $-0.5$ | -0.5 | -0.6 | -0.8 | -0.8 | -0.5 | -0.1 | $-3.0$ | $-2.5$ | $-2.9$ | -0.1 | $-0.8$ | -0.4 | -0.3 | $-1.0$ | $-1.2$ | -0.3 | -1.2 | +0.5 |
| b-tagging | 0.0 | 0.0 | -0.1 | 0.1 | 0.1 | 0.1 | -0.1 | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | $-0.4$ | -0.4 | -0.5 | -0.2 | $+0.1$ | $+0.1$ | $+0.1$ | $+0.1$ | $+0.1$ | $+0.1$ | $+0.2$ | $+0.2$ | -0.8 | -0.7 | -0.8 | $-0.3$ | $+0.4$ | $+0.4$ | $+0.4$ | +0.3 | $+0.4$ | $+0.4$ | $+0.3$ | $+0$. |
|  | 0.0 | 0.0 | $+0.1$ | +0.1 | +0.1 | +0.1 | +0.1 | 0.0 | +0.1 | 0.0 | 0.0 | 0.0 | +0.4 | $+0.4$ | +0.5 | $+0.2$ | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.2 | -0.2 | $+0.8$ | +0.7 | $+0.9$ | $+0.3$ | -0.4 | -0.4 | -0.4 | $-0.3$ | -0.4 | -0.4 | -0.3 | -0.5 |
| b-tagging (light jets) | -0.3 | . 3 | -0.5 | . 9 | +0.1 | +0.1 | . 3 | +0.2 | . 2 | . 2 | $+0.2$ | 0.1 | . 4 | $+0.3$ | 0.0 | -1.1 | 0.0 | -0.1 | $+0.2$ | $+0.2$ | $+0.1$ | +0.1 | $+0.1$ | 0.0 | $+0.5$ | +0.9 | $+0.7$ | $-1.0$ | $+0.3$ | -0.1 | $+0.2$ | $+0.3$ | -0.1 | -0.2 | -0.2 | -0.5 |
|  | +0.3 | +0.3 | $+0.5$ | +0.9 | -0.1 | -0.2 | -0.3 | $-0.2$ | -0.2 | -0.2 | -0.2 | -0.1 | -0.4 | $-0.3$ | +0.1 | +1.1 | -0.1 | -0.1 | -0.2 | -0.2 | -0.1 | -0.1 | -0.1 | 0.0 | -0.5 | -0.9 | $-0.7$ | +1.1 | $-0.3$ | +0.1 | -0.2 | $-0.3$ | 0.0 | $+0.2$ | $+0.2$ | +0.5 |
| luminosity | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
|  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| branching ratio $\mathrm{tt} \rightarrow \ell \ell$ | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | . 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
|  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| PDF eigenvector 1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | $+0.1$ | $+0.1$ | 0.0 | 0.0 | -0.1 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
|  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | +0.1 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | +0.1 | $+0.1$ | 0.0 | 0.0 | 0.0 | -0.1 | -0.1 | 0.0 | +0.1 | $+0.1$ | +0.1 |
| PDF eigenvector 2 | 0. | . 1 |  | +0.1 | . 3 | 0.1 | . 0 | 0.0 | +0.2 | . 1 | 0.0 | -0.1 | $+0.1$ | -0.1 | +0.1 | 0.1 | -0.5 | -0.2 | +0, | +0.1 | $+0.2$ | +0.1 | 0.0 | -0.2 | $+0.4$ | 0.0 | $+0.1$ | 0.0 | -0.6 | -0.3 | +0.1 | $+0.1$ | $+0.3$ | +0.2 | 0.0 | -0.1 |
|  | 0.0 | 0.0 | 0.0 | 0.0 | +0.1 | 0.0 | 0.0 | +0.1 | -0.1 | -0.1 | -0.1 | +0.1 | -0.1 | -0.1 | 0.0 | 0.0 | +0.2 | +0.1 | +0.1 | +0.1 | -0.1 | -0.1 | -0.1 | +0.1 | -0.3 | -0.2 | -0.1 | 0.0 | +0.3 | $+0.2$ | +0.2 | $+0.2$ | -0.2 | -0.2 | -0.1 | -0.1 |
| PDF eigenvector 3 | +0.1 | . 1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | -0.2 | $+0.1$ | +0.1 | +0.1 | -0.2 | +0.1 | $+0.1$ | $+0.1$ | -0.1 | $+0.1$ | 0.0 | -0.1 | -0.3 | $+0.1$ | +0.1 | $+0.1$ | 0.0 | $+0.1$ | $+0.2$ | $+0.1$ | $+0.1$ | 0.0 | 0.0 | $-0.3$ | -0.4 | +0.1 | +0.1 | $+0.1$ | +0.2 |
|  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | +0.1 | 0.0 | 0.0 | -0.1 | $+0.1$ | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | +0.1 | +0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | -0.1 | 0.0 | 0.0 | 0.0 | +0.1 | $+0.2$ | 0.0 | -0.1 | -0.1 | -0.1 |
| PDF eigenvector 4 | 0.0 | . 0 | 0.0 | 0.1 | 0.2 | 0.1 | 0.0 | 0.0 | 0.1 | . 1 | 0.0 | 0.0 | +0.1 | 0.0 | 0.0 | +0.1 | $-0.3$ | -0.2 | . 0 | +0.1 | +0.1 | +0.1 | 0.0 | -0.1 | $+0.3$ | $+0.1$ | 0.0 | 0.0 | -0.4 | -0.2 | 0.0 | $+0.1$ | +0.2 | $+0.2$ | 0.0 | -0.1 |
|  | 0.0 | 0.0 | 0.0 | 0.0 | +0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | $+0.1$ | $+0.1$ | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | $-0.2$ | -0.1 | 0.0 | 0.0 | $+0.2$ | $+0.1$ | 0.0 | -0.1 | -0.1 | -0.1 | 0.0 | +0.1 |
| PDF eigenvector 5 |  | . 1 | 0.0 | . 1 | 0.0 | 0.0 | +0.1 | +0.3 | -0.2 | -0.2 | -0.2 | +0.4 | -0.2 | -0.2 | -0.1 | +0.1 | $+0.2$ | +0.2 | $+0.3$ | +0.4 | -0.2 | -0.2 | -0.2 | $+0.1$ | -0.4 | -0.4 | $-0.3$ | -0.1 | $+0.3$ | $+0.3$ | $+0.5$ | +0.5 | -0.3 | -0.4 | -0.3 | -0.3 |
|  | +0.1 | $+0.2$ | +0.1 | -0.1 | +0.1 | +0.1 | -0.1 | -0.3 | +0.2 | +0.1 | +0.1 | -0.4 | +0.1 | $+0.2$ | $+0.2$ | -0.2 | $+0.1$ | 0.0 | -0.3 | -0.5 | $+0.2$ | +0.1 | $+0.1$ | -0.1 | $+0.1$ | +0.3 | $+0.3$ | +0.1 | 0.0 | 0.0 | -0.5 | $-0.7$ | $+0.2$ | +0.3 | $+0.2$ | +0.4 |
| PDF eigenvector 6 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | -0.1 | 0.0 | $+0.1$ | $+0.1$ | +0.1 | 0.0 | $+0.1$ | $+0.1$ | 0.0 | 0.0 | -0.2 | -0.1 | -0.1 | -0.1 | $+0.1$ | +0.1 | +0.1 | 0.0 | $+0.2$ | $+0.2$ | $+0.1$ | 0.0 | $-0.2$ | -0.2 | -0.2 | -0.1 | $+0.1$ | $+0.1$ | $+0.1$ | 0.0 |
|  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | $+0.1$ | 0.0 | $+0.1$ | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | -0.1 | 0.0 | 0.0 | $+0.1$ | +0.1 | +0.1 | +0.1 | -0.1 | -0.1 | 0.0 | 0.0 |
| PDF eigenvector 7 | -0.2 | 0.2 | 0.0 | . 2 | 0.1 | . 1 | 0.2 | +0.4 | -0.3 | -0.3 | -0.3 | +0.5 | -0.3 | -0.4 | -0.1 | $+0.2$ | $+0.3$ | $+0.3$ | +0.6 | +0.6 | -0.4 | -0.3 | -0.4 | 0.0 | -0.6 | -0.7 | -0.4 | -0.1 | $+0.6$ | +0.5 | +0.9 | +0.8 | -0.6 | -0.6 | $-0.6$ | -0.5 |
|  | +0.1 | +0.1 | 0.0 | -0.1 | 0.0 | 0.0 | -0.1 | -0.3 | $+0.2$ | $+0.2$ | $+0.2$ | -0.3 | $+0.2$ | $+0.2$ | +0.1 | -0.1 | -0.2 | -0.1 | -0.3 | -0.4 | $+0.2$ | $+0.2$ | $+0.2$ | 0.0 | $+0.3$ | +0.4 | $+0.2$ | $+0.1$ | $-0.3$ | -0.3 | -0.5 | -0.5 | $+0.3$ | $+0.3$ | $+0.3$ | +0.2 |
| PDF eigenvector 8 | -0.1 | 0.0 | -0.1 | 0.0 | 0.0 | $+0.1$ | 0.0 | $+0.2$ | -0.1 | 0.0 | -0.1 | +0.1 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | $+0.1$ | $+0.1$ | +0.1 | -0.1 | -0.1 | -0.1 | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | $+0.1$ | $+0.1$ | 0.0 | $+0.2$ | -0.1 | -0.1 | -0.1 | 0.0 |
|  | +0.1 | 0.0 | $+0.1$ | 0.0 | 0.0 | -0.1 | 0.0 | -0.1 | +0.1 | 0.0 | $+0.1$ | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | -0.1 | -0.1 | 0.0 | +0.1 | 0.0 | 0.0 | $+0.1$ | 0.0 | 0.0 | -0.1 | -0.1 | -0.1 | 0.0 | -0.1 | $+0.1$ | 0.0 | 0.0 | 0.0 |
| PDF eigenvector 9 | 0.0 | 0.0 | +0.1 | +0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.2 | +0.1 | 0.0 | 0.0 | $+0.1$ | 0.0 | 0.0 | +0.1 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | $+0.1$ | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 |
|  | 0.0 | 0.0 | -0.1 | -0.1 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | $+0.2$ | -0.1 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | +0.1 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | +0.1 |
| PDF eigenvector 10 | +0.1 | 0.1 |  | -0.1 | 0.0 | 0.0 | -0.1 | -0.2 | $+0.1$ | $+0.1$ | +0.1 | -0.2 | $+0.2$ | $+0.2$ | 0.0 | -0.1 | -0.2 | -0.1 | -0.3 | -0.3 | $+0.2$ | $+0.2$ | $+0.2$ | 0.0 | $+0.3$ | $+0.4$ | $+0.2$ | $+0.1$ | $-0.3$ | $-0.3$ | -0.4 | -0.4 | $+0.3$ | $+0.3$ | $+0.3$ | $+0.2$ |
|  | -0.1 | -0.1 | 0.0 | +0.1 | 0.0 | 0.0 | +0.1 | +0.2 | -0.1 | -0.2 | -0.2 | +0.2 | -0.2 | -0.2 | 0.0 | +0.1 | +0.2 | +0.2 | +0.3 | +0.3 | -0.2 | -0.2 | -0.2 | 0.0 | -0.4 | $-0.4$ | -0.2 | -0.1 | +0.3 | +0.3 | +0.5 | +0.4 | -0.3 | $-0.3$ | -0.3 | -0.2 |

