| 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 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| JER | 0. 2 | +0.6 | +0.3 | 0.6 | ${ }^{0.0}$ | +0.5 | 0.4 | +0.8 | 0.0 | 0.3 | 0.2 | - 0.9 | -0.8 | 0.9 | +0.3 | ${ }^{0.6}$ | ${ }^{0.5}$ | 0.2 | 0.8 | -0.6 | ${ }^{0.0}$ | +0.1 | +0.1 | -2.9 | +03 | -1.8 | +0.3 | -0.2 | -0.5 | -1.1 | 0.2 | 23 | -0.9 | 1.4 | -1.3 | +03 |
|  | -0.3 | ${ }^{-1.1}$ | -1.9 | -0.6 | -0.6 | $+0.2$ | -0.1 | $+0.2$ | -0.2 | -0.2 | +0.2 | 0.0 | +2.2 | +0.4 | +0.3 | -20 | -0.5 | -0.3 | -0.1 | +0.7 | +0.6 | +0.3 | +0.1 | +0.7 | +2.4 | $-1.3$ | +0.5 | +1. | +1.5 | -0.3 | +2.0 | +1.8 | +0.3 | +1.2 | -0.4 | -03 |
| bsolut | $+0.7$ | +0.4 | -0.1 | +0.5 | -0.1 | +0.3 | +03 | 0.4 | +0.1 | -0.1 | ${ }^{0.1}$ | -0.5 | +1.4 | +1.3 | 0.0 | $+0.4$ | -0.4 | -0.4 | -0.5 | +0.5 | +0.1 | ${ }^{-0.1}$ | +0.2 | -1.0 | +1.1 | -0.6 | +1.4 | -0.3 | -0.3 | -0.7 | -0.5 | -1.8 | -1.0 | -0.8 | -0.8 | -0.6 |
|  | -0.7 | -0.8 | $-1.4$ | -0.3 | 0.0 | +0.2 | +0.1 | -0.2 | -0.2 | $+0.2$ | +0.1 | 0.0 | -0.3 | -0.7 | -0.2 | -1.4 | 0.0 | 0.0 | $+0.3$ | +02 | +0.8 | +0.1 | +0.4 | +0.3 | -0.1 | -1.7 | +13 | -0.5 | +1.2 | +1.1 | +0.4 | +0.8 | +0.1 | $+0.4$ | +0.3 | +0.9 |
| JESAbsoluteScale | +0.5 | 0.0 | -0.1 | +0.5 | -0.2 | +0.3 | +0.2 | +0.3 | 0.0 | -0.1 | +0.2 | -0.1 | ${ }^{0.8}$ | -0.9 | -0.3 | ${ }^{0.8}$ | -0.3 | 0.4 | -0.4 | ${ }^{0.6}$ | ${ }^{-0.1}$ | $-0.4$ | -0.2 | -1.5 | -0.2 | +0.3 | +0.9 | ${ }^{-1.2}$ | $+0.1$ | -0.5 | -0.7 | ${ }^{0.0}$ | -0.6 | -0.2 | -1.0 | 0.6 |
|  | -0.7 | -0.7 | -1.1 | -0.5 | -0.1 | 0.0 | +0.2 | $+0.1$ | -0.1 | +0.1 | +0.2 | 0.0 | -0.4 | -0.4 | -0.5 | +03 | +0.2 | +0.1 | +0.3 | +12 | +0.5 | 0.0 | +0.2 | +0.4 | -0.1 | -1.1 | $+27$ | $+0.4$ | +0.8 | +0.4 | $-1.4$ | $-2.1$ | -0.2 | +1.3 | -0.3 | +099 |
| JESAbsolutestat | +0.3 | +0.9 | -1.1 | -0.4 | -0.4 | 0.0 | -0.2 | -0.4 | +0.1 | +0.1 | +0.6 | $+0.4$ | +1.1 | +0.8 | -0.6 | +13 | -0.5 | -0.5 | -0.4 | +0.6 | +0.2 | +0.2 | +0.7 | -2.2 | -0.2 | +1.8 | +1.7 | +0.8 | ${ }^{-1.0}$ | -1.1 | -1.5 | -3.7 | ${ }^{-0.1}$ | +0.9 | -0.8 | +0.7 |
|  | $-1.0$ | -0.3 | -0.4 | -0.3 | +03 | +0.1 | +0.4 | $+0.2$ | -0.4 | -0.3 | -0.5 | +0.3 | -0.4 | -0.3 | -1.2 | +2.4 | -0.1 | +0.2 | +0.6 | +1.4 | $+0.1$ | 0.0 | +0.1 | -0.4 | +2.9 | $-2.7$ | +22 | +0.4 | -0.2 | +0.6 | -0.1 | -2.1 | -0.6 | +0.7 | -0.7 | -0.1 |
| JESFlavourQCD | +2. | ${ }^{+2.6}$ | +1.2 | +1.4 | -0.2 | ${ }^{0.6}$ | +0.1 | $+0.7$ | +0.8 | +1.0 | -0.9 | +0.7 | +2.3 | +1.1 | -0.1 | +0.4 | -1.7 | -1.0 | -0.9 | -0.1 | 0.0 | -0.3 | -0.7 | -1.6 | +2.8 | -0.2 | -1.0 | -5.7 | -4.8 | -5.1 | -1.1 | -2.4 | -2.5 | -2.2 | -2.2 | -24 |
|  | -3.0 | -3.4 | -3.1 | -1.8 | 0.0 | -0.1 | +0.1 | -0.3 | -1.2 | -0.6 | -0.5 | -0.3 | -1.9 | -0.5 | -0.9 | -1.2 | +1.1 | +1.0 | +1.4 | +21 | +1.1 | +0.1 | +0.5 | +0.3 | +28 | +1.9 | +1.6 | +1.7 | +24 | +2.3 | +3.5 | +3.8 | +1.8 | +3.5 | +1.6 | +23 |
| JESFragmentation | +0.1 | 0.2 | -0.2 | 0. 2 | -0.1 | -.4 | +0.5 | 0.4 | +0.2 | 0.2 | -0.2 | -0.4 | $+0.7$ | +0.8 | +0.1 | -0.2 | ${ }^{-0.6}$ | -0.4 | -0.4 | +0.7 | $+0.3$ | $+0.4$ | $+0.3$ | ${ }^{-1.1}$ | $+0.1$ | -0.4 | +0.8 | -0.5 | -0.2 | -1.3 | -0.9 | $-2.4$ | -0.7 | -0.2 | $+0.3$ | +0.4 |
|  | -0.4 | -0.6 | -1.1 | -0.2 | 0.0 | 0.0 | 0.0 | +0.1 | -0.3 | -0.2 | -0.2 | -0.3 | -0.1 | +0.1 | -0.1 | +0.3 | +0.1 | +0.1 | +0.3 | +1.4 | +0.3 | -0.1 | +0.1 | +0.3 | +1.1 | -0.5 | +3.1 | -0.1 | +0.5 | +0.9 | -1.6 | 0.0 | -0.1 | +0.6 | 0.0 | +0.4 |
| JESPileUpDataMc | +0.5 | 0.0 | -0.5 | 0.0 | -0.1 | -0.4 | +0.4 | -0.7 | +0.2 | +0.2 | +0.1 | +0.5 | $+0.4$ | +0.5 | +0.1 | -0.7 | -0.5 | -0.3 | -0.1 | -03 | +0.3 | +0.1 | +1.0 | -1.1 | -0.5 | -1.1 | -0.2 | +0.4 | -0.4 | -1.0 | -0.2 | ${ }^{-1.4}$ | -0.5 | -0.8 | -0.9 | -0.9 |
|  | -0.5 | -0.9 | $-1.0$ | -0.5 | +0.1 | +0.1 | +0.1 | -0.1 | -0.2 | -0.4 | -0.3 | -0.6 | 0.0 | +0.3 | +0.4 | -0.1 | +0.4 | +0.1 | +0.4 | +1.4 | 0.0 | 0.0 | +0.5 | +0.3 | +1.2 | +0.3 | +23 | +0.3 | +0.7 | +0.9 | -0.9 | -0.1 | +0.3 | +1.1 | -0.9 | +0.9 |
| JESPileUPPRBB | 0.0 | ${ }^{-0.3}$ | -0.4 | $+0.1$ | -0.2 | $+0.4$ | ${ }^{+0.5}$ | ${ }^{+0.3}$ | $+0.4$ | +0.2 | $+0.4$ | +0.3 | -0.3 | -0.2 | -0.1 | ${ }^{-1.1}$ | ${ }_{0} 0$ | -0.2 | -0.2 | +03 | ${ }^{+0.1}$ | $+0.1$ | +0.3 | $+0.4$ | ${ }^{-1.1}$ | -1.7 | ${ }^{0.0}$ | -0.6 | -0.4 | ${ }^{-0.3}$ | -0.8 | -0.5 | -0.2 | ${ }^{0.0}$ | -0.8 | -0.5 |
|  | -0.2 | -0.4 | -0.4 | -0.1 | 0.0 | -0.1 | -0.3 | 0.0 | -0.3 | -0.2 | -0.2 | 0.0 | -0.1 | +1.9 | +2.3 | -0.6 | 0.0 | -0.2 | -0.2 | -02 | -0.1 | -0.4 | -0.1 | -0.1 | +1.7 | +0.8 | $+1.0$ | -0.1 | +0.5 | $+0.6$ | 0.0 | +1.9 | -0.1 | +1.0 | -0.5 | -0.3 |
| JESPPileUpPPEC1 | $+1.0$ | +1.4 | -0.3 | -0.1 | +0.1 | ${ }^{0.4}$ | +0.2 | ${ }^{0.1}$ | $+0.5$ | $+0.7$ | -0.6 | +0.2 | $+1.0$ | +1.2 | -0.3 | $+03$ | $-0.3$ | -0.2 | -0.6 | +02 | -0.1 | -0.2 | +0.1 | -1.0 | $+0.1$ | -0.4 | ${ }^{+1.2}$ | -5.9 | -0.8 | $-1.9$ | -0.7 | ${ }^{-2.1}$ | -0.9 | -0.5 | -0.6 | -0.8 |
|  | -0.9 | -1.2 | -1.2 | -0.2 | -0.6 | -0.4 | -0.2 | $+0.2$ | -0.5 | -0.6 | -0.7 | -0.5 | -0.2 | -0.7 | +0.1 | +23 | +0.1 | +0.2 | +0.4 | +21 | $+0.2$ | +0.2 | +0.3 | +0.6 | +0.4 | -0.2 | +20 | +1.5 | +0.6 | 0.0 | +2.1 | -0.7 | +0.9 | +0.9 | +0.6 | +0.9 |
| JESPRILUPPPIEC2 | 0.0 | ${ }^{0.0}$ | ${ }^{0.0}$ | 0.0 | 0.0 | 0.0 | ${ }_{0} 0.0$ | 0.0 | 0.0 | 0.0 | ${ }^{0.0}$ | 0.0 | ${ }^{0.0}$ | 0.0 | 0.0 | ${ }^{0.0}$ | 0.0 | ${ }^{0.0}$ | 0.0 | 0.0 | 0.0 | 0.0 | ${ }^{0.0}$ | ${ }^{0.0}$ | 0.0 | ${ }_{0} 0$ | 0.0 | 0.0 | ${ }^{0.0}$ | ${ }^{0.0}$ | 0.0 | 0.0 | 0.0 | ${ }_{0} .0$ | ${ }^{0.0}$ | 0.0 |
|  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | ${ }_{0} 0.0$ | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| JESPİleUpPLHF | ${ }^{0.0}$ | ${ }^{0.0}$ | ${ }_{0} 0.0$ | ${ }_{0} 0.0$ | ${ }^{0.0}$ | ${ }^{0.0}$ | 0.0 | ${ }_{0} 0.0$ | 0.0 | ${ }^{0.0}$ | ${ }^{0.0}$ | ${ }^{0.0}$ | 0.0 | 0.0 | 0.0 | ${ }^{0.0}$ | ${ }^{0.0}$ | 0.0 | 0.0 | 0.0 | ${ }^{0.0}$ | ${ }^{0.0}$ | ${ }^{0.0}$ | ${ }^{0.0}$ | ${ }^{0.0}$ | ${ }^{0.0}$ | ${ }^{0.0}$ | ${ }^{0.0}$ | ${ }^{0.0}$ | ${ }_{0} 0.0$ | ${ }^{0.0}$ | ${ }^{0.0}$ | ${ }^{0.0}$ | 0.0 | 0.0 | ${ }^{0.0}$ |
|  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | ${ }^{0.0}$ | 0.0 | 0.0 | 0.0 | ${ }_{0} 0.0$ | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 |
| JESPIIeUPPIRef | ${ }^{+0.1}$ | -0.1 | -0.3 | $+0.3$ | +0.2 | ${ }^{0.5}$ | +0.1 | +0.5 | +0.5 | +0.5 | ${ }^{0.0}$ | +0.1 | $+0.3$ | -0.3 | -0.6 | -0.9 | $-0.4$ | -0.1 | -0.2 | -0.4 | ${ }^{+0.2}$ | +0.5 | +0.7 | -0.7 | ${ }^{-1.1}$ | -1.2 | -1.2 | -0.9 | -0.8 | -0.8 | +0.5 | -0.8 | -0.1 | -1.2 | -0.4 | -0.6 |
|  | -0.2 | ${ }^{-0.6}$ | $-1.0$ | 0.0 | -0.2 | +0.1 | -0.2 | -0.3 | -0.6 | -0.4 | $-0.7$ | -0.7 | +0.1 | +0.7 | +0.8 | +23 | +0.1 | 0.0 | 0.0 | +0.9 | +0.1 | -0.1 | -0.1 | +0.6 | +1.2 | -0.4 | +1.3 | +1.1 | +1.7 | +1.4 | +1.0 | $-0.6$ | +0.2 | +0.2 | +0.6 | -0.4 |
| elativeBa | $+1.9$ | +2.2 | +1.5 | ${ }^{+1.6}$ | -0.1 | +0.3 | -0.2 | ${ }^{0.0}$ | +0.3 | +0.4 | +0.2 | ${ }^{-1.1}$ | $+1.6$ | $+1.4$ | +0.7 | $+0.1$ | -0.7 | -0.5 | -0.6 | -02 | +0.2 | $-0.2$ | -0.5 | -0.8 | +2.5 | -0.7 | +1.5 | -4.7 | -1.9 | -2.5 | -0.9 | -0.8 | ${ }^{-1.8}$ | -1.8 | -1.8 | 1.7 |
|  | -2.6 | $-2.7$ | -2.8 | -1.7 | -0.1 | -0.2 | +0.2 | +0.7 | -0.7 | -0.4 | -0.1 | +1.1 | -0.8 | -0.1 | -0.6 | -1.7 | +0.2 | 0.0 | +1.1 | +20 | +0.9 | +0.2 | +1.2 | +1.5 | +0.9 | $+0.2$ | 0.0 | +2.2 | +0.7 | +1.4 | +1.4 | -0.3 | +1.1 | +2.1 | +1.2 | +1.4 |
| JESRelativefSR | -0.6 | -0.9 | -0.7 | -0.1 | +0.2 | +0.1 | +0.2 | $+0.2$ | -0.2 | -0.2 | -0.2 | ${ }^{0.0}$ | -0.5 | -0.8 | -0.5 | -0.5 | $+0.2$ | +0.2 | $+0.5$ | -0.1 | +0.5 | 0.0 | $+0.8$ | +0.2 | +0.3 | ${ }^{-0.4}$ | +0.9 | +0.5 | +0.7 | +0.8 | -0.7 | +1.5 | 0.0 | $+0.8$ | -0.5 | -0.5 |
|  | +0.2 | +0.5 | +0.2 | 0.0 | +0.1 | +0.2 | +0.1 | $+0.2$ | -0.1 | -0.1 | +0.3 | 0.0 | +1.0 | +0.8 | +0.1 | +0.7 | -0.8 | -0.5 | -0.1 | +0.9 | +0.3 | 0.0 | 0.0 | -0.9 | -0.2 | +1.1 | +0.4 | -0.1 | -0.6 | -0.5 | -1.5 | -0.9 | -0.6 | -0.4 | -0.9 | $-1.0$ |
| JESRelativeJEREC1 | 0.0 | ${ }^{0.0}$ | -0.2 | 0.0 | +0.1 | ${ }^{0.0}$ | 0.0 | $+0.1$ | 0.0 | ${ }^{0.0}$ | +0.2 | -0.4 | +0.1 | ${ }^{-0.1}$ | -0.1 | +0.3 | -0.1 | 0.0 | +0.2 | $+1.0$ | +0.2 | 0.0 | ${ }^{0.0}$ | +0.5 | +0.2 | -0.4 | $+1.6$ | 0.0 | -0.2 | +0.1 | ${ }^{-1.0}$ | -2.5 | -0.2 | +0.2 | -0.9 | $+0.4$ |
|  | 0.0 | 0.0 | -0.7 | -0.1 | 0.0 | 0.0 | -0.1 | +0.2 | 0.0 | -0.2 | -0.3 | -0.6 | -0.1 | ${ }^{+0.1}$ | -0.2 | +0.4 | $0^{0.0}$ | +0.1 | +0.2 | +13 | +0.2 | 0.0 | $+0.1$ | +1.8 | +1.0 | -1.0 | +2.1 | -0.1 | -0.6 | +0.1 | -0.8 | -3.1 | -0.2 | $+0.6$ | -0 | +0.1 |

