



Forward Scale Factors

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$$D^{!VVL}(m) = \mu \tilde{S}^{!VVL}(m)(1 - \epsilon_S^{VVL}) + B^{!VVL}(m)$$

$$D^{VVL!ID}(m) = \mu \tilde{S}^{VVL!ID}(m)(\epsilon_S^{VVL} - \epsilon_S^{ID}) + B^{!VVL}(m) \frac{\epsilon_B^{VVL} - \epsilon_B^{ID}}{1 - \epsilon_B^{VVL}}$$

$$D^{ID}(m) = \mu \tilde{S}^{ID}(m) \epsilon_S^{ID} + B^{!VVL}(m) \frac{\epsilon_B^{ID}}{1 - \epsilon_B^{VVL}}$$

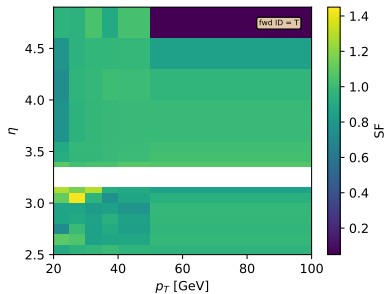
- define threshold t in normalised likelihood ℓ spectrum $n(\ell)$
- normalisation does not include underflow bin
- pass VVL if $\ell > t$
- define $N(t) = \int_{-16}^t n(\ell) d\ell$ with $N(3) = \text{underflow} + 1$
- set threshold via:

$$N_{MC}(t_1) = \text{underflow} + 2\% - \text{loose}$$

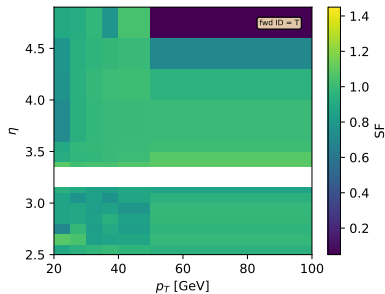
$$N_{MC}(t_2) = \text{underflow} + 1\% + x(0.1\%) - \text{medium}$$

- where $x(p)$ is defined such that

$$\frac{\int_{-3}^{t_2} n_{MC}(\ell) d\ell}{\int_{-3}^{t_2} n_{data}(\ell) d\ell} \geq p$$



(a) using threshold 1



(b) using threshold 2

