

1 Structure of the observable

In this document we report the relevant formulas for the computation of semi-inclusive deep-inelastic scattering (SIDIS) multiplicities under the assumption that the (negative) virtuality of the Q^2 of the exchanged vector boson is much smaller than the Z mass. This allows us to neglect weak contributions and write the multiplicity as:

$$\frac{d\sigma}{dx dQ^2 dz dp_T} = \frac{2p_T \pi \alpha^2}{z^2 x Q^4} [1 + (1-y)^2] H(Q, \mu) \sum_q e_q^2 \int_0^\infty db b J_0\left(\frac{bp_T}{z}\right) \bar{F}_q(x, b; \mu, \zeta) \bar{D}_q(z, b; \mu, \zeta), \quad (1.1)$$

where:

$$\bar{F}_i(x, b; \mu, \zeta) = x F_i(x, b; \mu, \zeta) = R_q(\mu_0, \zeta_0 \rightarrow \mu, \zeta; b) \sum_j \int_x^1 dy C_{ij}(y; \mu_0, \zeta_0) \left[\frac{x}{y} f_j\left(\frac{x}{y}, \mu_0\right) \right], \quad (1.2)$$

and:

$$\bar{D}_i(z, b; \mu, \zeta) = z^3 D_i(z, b; \mu, \zeta) = R_q(\mu_0, \zeta_0 \rightarrow \mu, \zeta; b) \sum_j \int_z^1 dy [y^2 \mathbb{C}_{ij}(y; \mu_0, \zeta_0)] \left[\frac{z}{y} d_j\left(\frac{z}{y}, \mu_0\right) \right]. \quad (1.3)$$

References