

$$\Delta_n^{(3)}(z, \bar{z}) = 16 \left( \frac{\alpha_s}{4\pi} \right)^3 f_{abe} f_{cde} \left\{ \sum_{1 \leq i < j < k < l \leq n} \left[ \begin{aligned} & \mathbf{T}_i^a \mathbf{T}_j^b \mathbf{T}_k^c \mathbf{T}_l^d (F(1 - 1/z) - F(1/z)) \\ & + \mathbf{T}_i^a \mathbf{T}_k^b \mathbf{T}_j^c \mathbf{T}_l^d (F(1 - z) - F(z)) \\ & + \mathbf{T}_i^a \mathbf{T}_l^b \mathbf{T}_j^c \mathbf{T}_k^d (F(1/(1 - z)) - F(1 - 1/(1 - z))) \end{aligned} \right] \right. \\ \left. - \sum_{i=1}^n \sum_{\substack{1 \leq j < k \leq n \\ j, k \neq i}} \left\{ \mathbf{T}_i^a, \mathbf{T}_i^d \right\} \mathbf{T}_j^b \mathbf{T}_k^c (\zeta_5 + 2\zeta_2 \zeta_3) \right\}$$