

$$\Gamma_{\text{Dip.}}(\lambda, a_s) = \frac{1}{4} \hat{\gamma}_K(a_s) \sum_{(i,j)} \ln \left(\frac{\lambda^2}{-s_{ij}} \right) \mathbf{T}_i \cdot \mathbf{T}_j + \sum_{i=1}^n \gamma_{J_i}(a_s)$$