

1. Lagrangians

1) Charged Lepton Flavor Violation Lagrangian.

$$L_{CLFV} = \frac{m_\mu}{(1+\kappa)\Lambda^2} \bar{\mu}_R \sigma_{\mu\nu} e_L F^{\mu\nu} + \frac{\kappa}{(1+\kappa)} \bar{\mu}_L \gamma_\mu e_L \left(\sum_{q=u,d} \bar{q}_L \gamma^\mu q_L \right)$$

2) Lagrangian of ALP a with decay constant f_a including gauge boson couplings and fermion couplings.

$$L^a \supset -\frac{a}{f_a} \left[\sum_{X=F,Z,W,G} c_x X \tilde{X} + \sum_{f,i,j} \bar{f}_i [i(m_{f_j} - m_{f_i}) v^f{}_{ij} + i(m_{f_j} + m_{f_i}) a^f{}_{ij} \gamma_5] f_j \right]$$

2. $\mu \rightarrow e$ conversion interactions.