$$-i\Sigma_{ij}^{\nu}(p) = \int \frac{d4k}{(2\pi)^4} \left(y_{in\alpha}\right) iS_F(k) \left(y_{jn\alpha}\right) i\Delta_F(p+k)$$

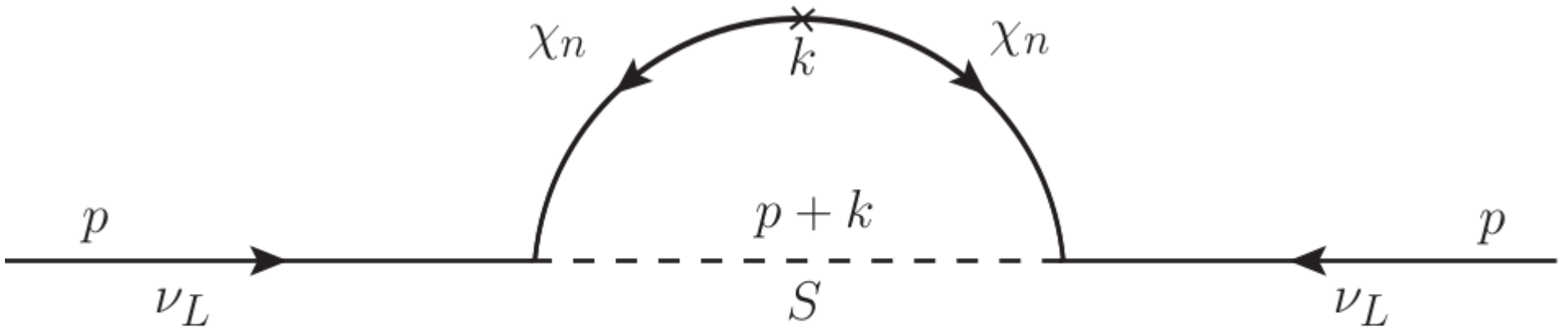

Figure 9.1: Generic one-loop neutrino mass contribution

$$M_{ij}^{\nu} = -\frac{y_{in\alpha}y_{jn\alpha}}{16\pi^2} m_{\chi_n} \left[\text{cte}(\infty) + f\left(m_{\chi_n}, m_{S_\alpha}^2\right)\right]$$

where

$$f\left(m_{\chi_n}^2, m_{S_\alpha}^2\right) = \frac{m_{S_\alpha}^2 \ln\left(m_{S_\alpha}^2\right) - m_{\chi_n}^2 \ln\left(m_{\chi_n}^2\right)}{m_{\chi_n}^2 - m_{S_\alpha}^2}$$