

$$\frac{f_{\rho NN}^{(1)}}{f_{\rho}} = 0.3747$$

$$\frac{f_{\omega NN}^{(1)}}{f_{\omega}} = 1.5717$$

$$\frac{f_{\phi NN}^{(1)}}{f_{\phi}} = -1.1247$$

$$\zeta_{\rho} = 4.9582$$

$$\zeta_{\omega} = 17.0620$$

$$\zeta_{\phi} = 13.4428$$

$$\frac{f_{\rho NN}^{(2)}}{f_{\rho}} = ? = +\frac{1}{2}(\mu_p - \mu_n - 1) \frac{m_{\rho'}^2 m_{\phi'}^2}{(m_{\rho'}^2 - m_{\rho}^2)(m_{\rho'}^2 - m_{\phi}^2)} \quad \checkmark$$

$$\frac{f_{\omega NN}^{(2)}}{f_{\omega}} = -0.8036$$

$$\frac{f_{\phi NN}^{(2)}}{f_{\phi}} = 0.2657$$

$$\frac{f_{\rho' NN}^{(1)}}{f_{\rho'}} = ? = -\frac{1}{2} \frac{(m_{\rho''}^2 - 2m_{\rho}^2)}{(m_{\rho''}^2 - m_{\rho'}^2)} \left(\frac{f_{\rho NN}^{(1)}}{f_{\rho}} \right) \quad \times$$

$$\frac{f_{\omega' NN}^{(1)}}{f_{\omega'}} = 0.0418$$

$$\frac{f_{\phi' NN}^{(1)}}{f_{\phi'}} = 0.1879$$

$$f_{\rho'} =$$

$$f_{\omega'} =$$

$$f_{\phi'} =$$

$$\frac{f_{\rho' NN}^{(2)}}{f_{\rho'}} = ? = -\frac{1}{2}(\mu_p - \mu_n - 1) \frac{m_{\rho''}^2 m_{\phi}^2}{(m_{\rho''}^2 - m_{\rho'}^2)(m_{\rho'}^2 - m_{\phi}^2)} \quad \checkmark$$

$$\frac{f_{\omega' NN}^{(2)}}{f_{\omega'}} = ?$$

$$\frac{f_{\phi' NN}^{(2)}}{f_{\phi'}} = 0.1781$$

$$\begin{aligned} \rightarrow &= +\frac{1}{2}(\mu_p + \mu_n - 1) \frac{m_{\omega''}^2 m_{\phi''}^2}{(m_{\phi''}^2 - m_{\omega'}^2)(m_{\omega''}^2 - m_{\omega'}^2)} - \\ &- \frac{(m_{\phi''}^2 - m_{\omega}^2)(m_{\omega''}^2 - m_{\omega}^2)}{(m_{\phi''}^2 - m_{\omega'}^2)(m_{\omega''}^2 - m_{\omega'}^2)} \left(\frac{f_{\omega NN}^{(2)}}{f_{\omega}} \right) - \\ &- \frac{(m_{\phi''}^2 - m_{\phi}^2)(m_{\omega''}^2 - m_{\phi}^2)}{(m_{\phi''}^2 - m_{\omega'}^2)(m_{\omega''}^2 - m_{\omega'}^2)} \left(\frac{f_{\phi NN}^{(2)}}{f_{\phi}} \right) - \\ &- \frac{(m_{\phi''}^2 - m_{\phi'}^2)(m_{\omega''}^2 - m_{\phi'}^2)}{(m_{\phi''}^2 - m_{\omega'}^2)(m_{\omega''}^2 - m_{\omega'}^2)} \left(\frac{f_{\phi' NN}^{(2)}}{f_{\phi'}} \right) \end{aligned} \quad \checkmark$$