$$H = \begin{pmatrix} {}^3S_1 & {}^3D_1 & \\ \cdot & 0 & \cdot \\ 0 & \cdot & \cdot \\ \cdot & \cdot & \cdot \end{pmatrix} \begin{matrix} {}^3S_1 \\ {}^3D_1 \\ \\ \end{matrix}$$

Tensor Force

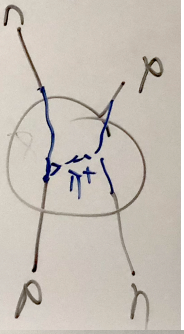
$S = 1, 0$

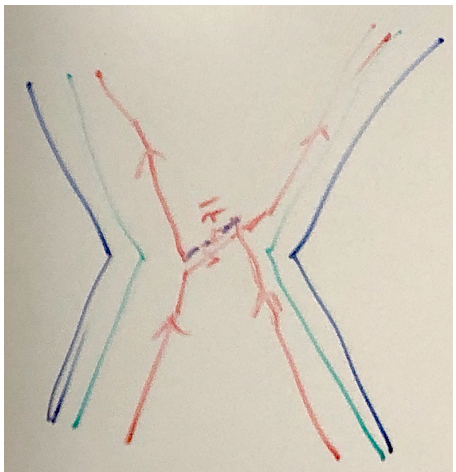
$I = 1, 0$

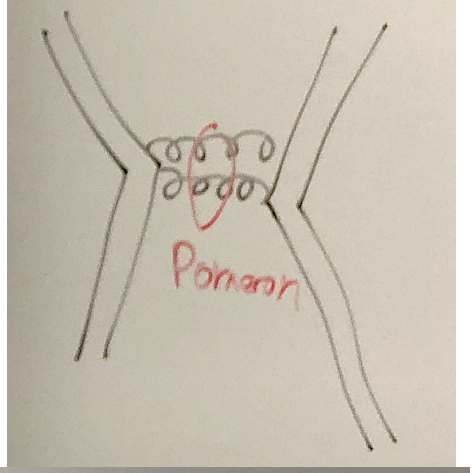
$[H, I_3] = [H, I^2] = 0$

Isospin structure $\uparrow$, $\vec{\tau}_1 \cdot \vec{\tau}_2$

$\tau_{1(3)}\tau_{2(3)}$, $\tau_{1(+)}\tau_{2(-)}$







$j\omega A_\mu$

$\frac{\omega^2}{c^2} - (E^2 - p^2) = m^2$

$\Box A^\mu = \mu_0 j^\mu$

$\frac{\partial}{\partial t} = 0 \Rightarrow$

$\Box \to -\vec{\nabla}^2 = -\Delta$

$\vec{j}$ ungeladen

$\Rightarrow \vec{\nabla}^2 \Phi = -\frac{\rho}{\varepsilon_0}$

$(\Box + m^2)\psi = 0$

Klein-Gordon Gleichung

$(\vec{\nabla}^2 + m^2)\psi = (4\pi\delta^3(\vec{r}))\psi$

Source term

$N \to N + \pi$

$\vec{\sigma} \cdot \vec{p}$

= absorption term

$\Rightarrow \vec{\sigma}_1 \cdot \vec{\sigma}_2$ Scalar

$(3\vec{\sigma}_1 \cdot \hat{r}\,\vec{\sigma}_2 \cdot \hat{r} - \vec{\sigma}_1 \vec{\sigma}_2)$ Tensor

S_{12}

OPE

