

The $\nu - \bar{\nu}$ asymmetry

The neutrino-antineutrino asymmetry in $\nu(\bar{\nu})$ -nucleon elastic scattering reads:

$$\mathcal{A}_{p(n)} = \frac{1}{4|V_{ud}|^2} \left(\pm 1 - \frac{G_A^s}{G_A} \right) \times \\ \times \left(\pm 1 - 2 \sin^2 \theta_W \frac{G_M^{p(n)}}{G_M^3} - \frac{1}{2} \frac{G_M^s}{G_M^3} \right) .$$

Thus, in the asymmetry \mathcal{A} the strange axial and vector form factors enter in the form of ratios, G_A^s/G_A and G_M^s/G_M^3 .

Taking into account only terms which linearly depend on the strange form factors:

$$\mathcal{A}_{p(n)} = \mathcal{A}_{p(n)}^0 \mp \frac{1}{8} \frac{G_M^s}{G_M^3} \mp \frac{G_A^s}{G_A} \mathcal{A}_{p(n)}^0$$

with

$$\mathcal{A}_{p(n)}^0 = \frac{1}{4} \left(1 \mp 2 \sin^2 \theta_W \frac{G_M^{p(n)}}{G_M^3} \right)$$