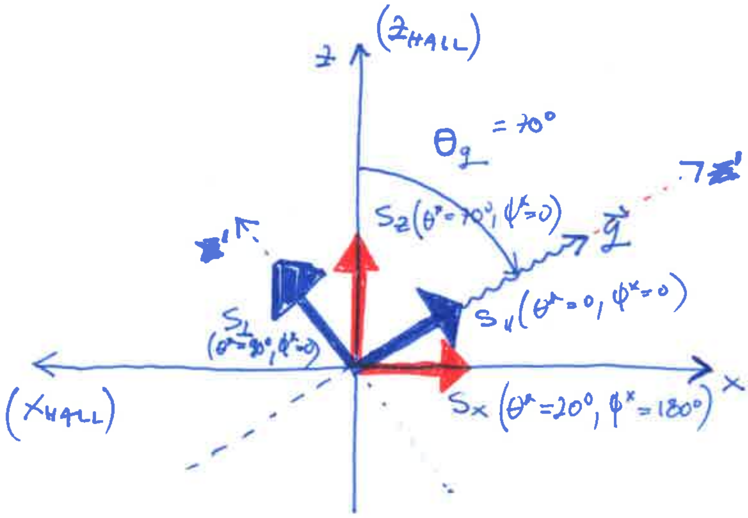
09/20/II

$$A = - \frac{2\tau v_{T'} \cos\theta^* G_M^{p\,2} - 2\sqrt{2\tau(1+\tau)}\, v_{TL'} \sin\theta^* \cos\phi^* G_M^p G_E^p}{(1+\tau) v_L G_E^{p2} + 2\tau v_T G_M^{p\,2}}$$

Elastična asimetrija



θ^* je kut med spinom in $\vec{q}$:

(1.) $A_\parallel$: $\theta^* = 0$:

$$A_\parallel = - \frac{2\tau v_{T'} \cos 0\, G_M^{p\,2} - 0}{(1+\tau) v_L G_E^{p2} + 2\tau v_T (G_M^p)^2}$$

$$\boxed{A_\parallel = - \frac{2\tau v_{T'} G_M^{p\,2}}{(1+\tau) v_L G_E^{p2} + 2\tau v_T (G_M^p)^2}}$$

(2.) $A_\perp$: $\theta^* = 90°,\ \phi^* = 0°$:

$$A_\perp = - \frac{0 - 2\sqrt{2\tau(1+\tau)}\, v_{TL'} \sin 90° \cos 0°\, G_M^p G_E^p}{(1+\tau) v_L G_E^{p\,2} + 2\tau v_T G_M^{p2}}$$

$$\boxed{A_\perp = + \frac{2\sqrt{2\tau(1+\tau)}\, v_{TL'} G_M^p G_E^p}{(1+\tau) v_L G_E^{p2} + 2\tau v_T (G_M^p)^2}}$$

$$\frac{A_\perp}{A_\parallel} = \frac{\cancel{2}\sqrt{2\tau(1+\tau)}\, v_{TL'} \cancel{G_M^p} G_E^p}{-\cancel{2}\tau v_{T'} G_M^{p\cancel{2}}} = -\frac{G_E^p}{G_M^p}\sqrt{\frac{2(1+\tau)}{\tau}}\frac{v_{TL'}}{v_{T'}}$$

A_x: $\theta^* = 20°,\ \phi^* = 180°$:

$$A_x = -\frac{2\tau v_T' \cos(20°) G_M^{p\,2} - 2\cdot\sqrt{2\tau(1+\tau)}\ v_{TL}' \sin(20°)\underbrace{\cos(180°)}_{-1} G_M^p G_E^p}{(1+\tau) v_L G_E^{p\,2} + 2\tau v_T G_M^{p\,2}}$$

$$= -\frac{2\tau v_T' \cos(20°) G_M^{p\,2} + 2\sqrt{2\tau(1+\tau)}\ v_{TL}' \sin(20°) G_M^p G_E^p}{(1+\tau) v_L G_E^{p\,2} + 2\tau v_T G_M^{p\,2}}$$

$$= + A_{\parallel} \cos(20°) - A_{\perp} \cdot \sin(20°)$$

A_z: $\theta^* = 70°,\ \phi^* = 0°$

$$A_z = -\frac{2\tau v_T' \cos(70°) G_M^{p\,2} - 2\sqrt{2\tau(1+\tau)}\ v_{TL}' \sin(70°)\cos(0°) G_M^p G_E^p}{(1+\tau) v_L (G_E^p)^2 + 2\tau v_T (G_M^p)^2}$$

$$= -\frac{2\tau v_T' \cos(70°) G_M^{p\,2} - 2\sqrt{2\tau(1+\tau)}\ v_{TL}' \sin(70°) G_M^p G_E^p}{(1+\tau) v_L (G_E^p)^2 + 2\tau v_T (G_M^p)^2}$$

$$\boxed{\begin{aligned}\cos\varphi &= \sin(\pi/2 - \varphi)\\ \sin\varphi &= \cos(\tfrac{\pi}{2} - \varphi)\end{aligned}} \qquad \left.\begin{aligned}\cos(70) &= \sin(20)\\ \sin(70) &= \cos(20)\end{aligned}\right\}$$

$$= -\frac{2\tau v_T' \sin(20°) G_M^{p\,2} - 2\sqrt{2\tau(1+\tau)}\ v_{TL}' \cos(20°) G_M^p G_E^p}{(1+\tau) v_L (G_E^p)^2 + 2\tau v_T (G_M^p)^2}$$

$$= A_{\parallel} \cdot \sin(20°) + A_{\perp} \cos(20°)$$

$$A_x = A_{\parallel} \cos(20^\circ) - A_{\perp} \cdot \sin(20^\circ)$$

$$A_z = A_{\parallel} \cdot \sin(20^\circ) + A_{\perp} \cos(20^\circ)$$

$$\boxed{\begin{pmatrix} A_x \\ A_z \end{pmatrix} = \begin{pmatrix} \cos(20^\circ) & -\sin(20^\circ) \\ \sin(20^\circ) & \cos(20^\circ) \end{pmatrix} \begin{pmatrix} A_{\parallel} \\ A_{\perp} \end{pmatrix}}$$

$\downarrow$ Inverzna rotacija

$$\begin{pmatrix} A_{\parallel} \\ A_{\perp} \end{pmatrix} = \begin{pmatrix} \cos(20^\circ) & \sin(20^\circ) \\ -\sin(20^\circ) & \cos(20^\circ) \end{pmatrix} \begin{pmatrix} A_x \\ A_z \end{pmatrix}$$

$$R_L = (1+\tau) G_E^2$$

$$R_T = 2\tau G_M^2$$

$$R_{T'} = 2\tau G_M^2$$

$$R_{TL'} = 2\sqrt{2\tau(1+\tau)}\, G_M G_E$$

$$\tau = -\frac{Q^2}{4M^2} \rightarrow \text{Donnelly}$$

$$\boxed{\tau_{Ge} = \frac{Q^2}{4M^2}}$$

Tabela ima Ge vpeljan τ. Haiyan ima isto definicijo. Ona pod pogojem $Q^2>0$, zato mora biti τ brez (−). Donnelly pa je vzel $Q^2<0$, zato je (−).

To pa ne vpliva na podatke o asimetriji!