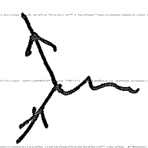
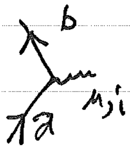
The interaction hamiltonian density is

$$\mathcal{H}_I = e\,\bar{\psi}\gamma^\mu \tfrac{1}{2}\vec{\sigma}\cdot\vec{A}_\mu \psi .$$

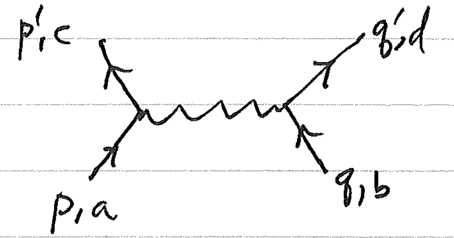
The propagator changes

$$\frac{-i\eta_{\mu\nu}}{q^2+i\epsilon} \longrightarrow \frac{-i\eta_{\mu\nu}\delta_{ij}}{q^2+i\epsilon}$$

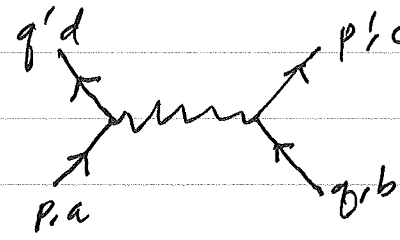
and the vertex changes

 $= -ie\gamma^\mu \quad \longrightarrow$  $-ie\gamma^\mu \tfrac{1}{2}\sigma^i_{ba}.$

So the diagrams for $f_a + f_b \to f_c + f_d$ are



and



$$i\mathcal{M} = u(p',s')(-ie\gamma^\mu \tfrac{1}{2}\sigma^i_{ca})u(p,s)\left(\frac{-i\eta_{\mu\nu}\delta_{ij}}{(p-p')^2+i\epsilon}\right)\bar{u}(q',t')(-ie\gamma^\nu\tfrac{1}{2}\sigma^j_{db})u(q,t)$$

$$-\ \bar{u}(q',t')(-ie\gamma^\mu\tfrac{1}{2}\sigma^i_{da})u(p,s)\left(\frac{-i\eta_{\mu\nu}\delta_{ij}}{(p-q')^2+i\epsilon}\right)\bar{u}(p',t')(-ie\gamma^\nu\tfrac{1}{2}\sigma^j_{cb})u(q,t)$$

$$i\mathcal{M} = \frac{ie^2}{4}\left[\frac{\bar{u}(p',s')\gamma^\mu u(p,s)\,\sigma^i_{ca}\sigma^i_{db}}{(p-p')^2+i\epsilon}\bar{u}(q',t')\gamma_\mu u(q,t)\right.$$

$$\left. - \frac{\bar{u}(q',t')\gamma^\mu u(p,s)\,\sigma^i_{da}\sigma^i_{cb}}{(p-q')^2+i\epsilon}\bar{u}(p',t')\gamma_\mu u(q,t)\right].$$

For instance, if $a=b=1$ and $c=d=2$, then

$$\sigma^i_{21}\sigma^i_{21} = 1^2 + i^2 = 1+(-1) = 0,$$

and the amplitude vanishes.

Another example: $a=1$, $b=2$, $c=1$, $d=2$:

$$\sigma^i_{11}\sigma^i_{22} = \sigma^3_{11}\sigma^3_{22} = -1$$

$$\sigma^i_{21}\sigma^i_{12} = \sigma^1_{21}\sigma^1_{12} + \sigma^2_{21}\sigma^2_{12} = 2.$$