Introduction to quantum electrodynamics
135.045 - (VO 2,0) 2014S

Homework #3 (Mar 17, 2014)

3.1 Show that $\{\gamma^\mu, \gamma^\nu\} = 2g^{\mu\nu}\mathbb{1}$ is invariant under $\gamma^\mu = S^{-1}(L)\gamma^\rho(L^{-1})^\mu{}_\rho S(L)$ and $\gamma^\nu = S^{-1}(L)\gamma^\sigma(L^{-1})^\nu{}_\sigma S(L)$. $(Eq.(2.26))$.

3.2 Show that $[\gamma^\mu, T] = \omega^\mu{}_\nu\gamma^\nu$ is solved by $T = -\frac{i}{2}\omega_{\mu\nu}S^{\mu\nu}$ with $S^{\mu\nu} := \frac{i}{4}[\gamma^\mu, \gamma^\nu]$. (Eq. (2.29))