Introduction to quantum electrodynamics
135.045 - (VO 2,0) 2015S

Homework #04 (Apr 13, 2015)

4.1 Show Eqs. (2.46) - (2.48): $\gamma^5 = (\gamma^5)^\dagger, (\gamma^5)^2 = \mathbb{1}, \{\gamma^5, \gamma^\mu\} = 0$ (only for μ = Matr.Nr. mod 4, i.e. 0,1,2, or 3), and $[\gamma^5, S^{\mu\nu}] = 0$.

4.2 Show that by acting $\gamma^5\gamma^0$ on $\gamma^\mu p_\mu \psi = 0$ on , one obtains $\Sigma \cdot p\ \psi = \gamma^5 p^0 \psi$ Eq. (2.50).

4.3 Show that $\gamma^0 S^\dagger \gamma^0 = S^{-1}$ Eq. (2.54).