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

Homework #2 (Mar 10, 2014)

2.1 Show that the Clifford algebra relation (2.12) follows from (2.7) $\sim$ (2.9).

2.2 Show that γ^μ are traceless.

2.3 Construct $\gamma^0{}_p$ and $\gamma^1{}_p$ in the "personal" representation obtained from the Dirac representation by $\gamma^\mu{}_p = U \ \gamma^\mu \ U^{-1}$ using the matrix $U = ((\sigma^m, 0), (0, \sigma^n))$.

n ... last digit of Matrikel-No. mod 3 (0≡3)

m ... last but one digit of Matrikel-No. mod 3

e.g. Matr. No. $1234567 \rightarrow n = 7 \equiv 1 \pmod 3$; $m \equiv 6 \equiv 3 \pmod 3 \rightarrow U = ((\sigma^3, 0), (0, \sigma^1))$.

Check the properties i) $\sim$ iii) on p5 for these two γ-matrices.