

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

Homework #02 (Mar 16, 2015)

- 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 γ^0_p and γ^1_p in the "personal" representation obtained from the Dirac representation by $\gamma^\mu_p = U\gamma^\mu U^{-1}$ using the matrix $U = ((\sigma^m, 0), (0, \sigma^n))$.
- $n \dots$ last digit of Matrikel-No. mod 3 ($0 \equiv 3$)
- $m \dots$ last but one digit of Matrikel-No. mod 3
- e.g. Matr. No. 1234567 $\rightarrow n=7 \equiv 1 \pmod{3}$; $m=6 \equiv 3 \pmod{3} \rightarrow U = ((\sigma^3, 0), (0, \sigma^1))$.
- Check the properties i) \sim iii) on p5 for these two γ -matrices.