

831 Homework set 13 (due Dec. 8)

1. Trace techniques for Dirac matrices

Prove:

$$\text{Tr}(\gamma^\mu \gamma^\nu \gamma^\rho) = 0, \quad \text{also true for any odd number of } \gamma' \text{ s.}$$

$$\text{Tr}[(1 \pm \gamma_5) \gamma^\mu \not{a} \gamma^\nu \not{b} \gamma_\mu \not{c} \gamma_\nu \not{d}] = -32(a \cdot c)(b \cdot d).$$

where $\not{a} = a^\mu \gamma_\mu$ etc.

2. Bhabha scattering: $e^+e^- \rightarrow e^+e^-$.

Peskin and Schroeder p.170, Problem 5.2.