

University of California at Santa Barbara
Physics Department
Physics 225A Homework 5

In class we briefly reviewed the Dirac equation.

If you do not feel confident about it, read Chapter 5 in Halzen and Martin.

It is very good, in my opinion.

- **Problem 1**

Halzen and Martin, Problem 4.3

- **Problem 2**

Halzen and Martin, Problem 4.4

- **Problem 3**

Halzen and Martin, Problem 5.4

- **Problem 4**

Halzen and Martin, Problem 5.6

To do this problem you should read Section 5.4 in Halzen and Martin.

- **Problem 5**

Halzen and Martin, Problem 5.13

- **Problem 6**

Halzen and Martin, Problem 5.14

Note: the helicity operator is given in equation 5.30. You need to show that this operator commutes with the Hamiltonian.

- **Problem 7**

Halzen and Martin, Problem 5.15