PHY 5667 : Quantum Field Theory A, Fall 2005

November 3^{rd}, 2005

Assignment # 5

(due Thursday November 17^{th}, 2005)

1. Consider the two fermion scattering:

$$\text{fermion}(p) + \text{fermion}(k) \rightarrow \text{fermion}(p') + \text{fermion}(k')$$

in the context of the Yukawa theory. We have derived the lowest order or *tree level* invariant matrix element $\mathcal{M}$ for this scattering process in class. Using that result, complete our discussion by calculating the differential cross section $\left(\frac{d\sigma}{d\Omega}\right)_{CM}$ and the total cross section σ.

2. Problem 5.1 of Peskin and Schroder's book (use Problem 4.4 only as a reference).

3. Problem 5.2 of Peskin and Schroder's book.