

Physics 217. Quantum Field Theory. Professor Dine

Fall, 2013. Homework Set 4

Due Tuesday, Nov. 26

1. Work through the details of the polarized electron positron annihilation calculation, for one choice of helicity.
2. Compton scattering: fill in the details of Peskin's computation of $\sum |\mathcal{M}|^2$.
3. Peskin 5.1.
4. Peskin 5.2.
5. **Not to submit** Look over the other problems in this section. All are important to physical processes, and it is good to be aware of them. The spinor product formalism, discussed in problem 5.3, is very useful in a range of problems. The positronium lifetime is well measured and has been carefully studied theoretically. In QCD, there are decays which can be studied in a very similar ways (for example, the decay of the ψ particle was understood early on in this way). You don't need to hand anything in on this problem, but I would urge you to spend about 1/2 hour looking these over.