

Physics 332 – Problem Set # 6

(due Wednesday, May 24)

1. Peskin and Schroeder, Problem 17.1.
2. In class, I sketched the derivation of the β function of a non-Abelian gauge theory from the renormalization counterterms δ_1 , δ_2 , and δ_3 . Work through this calculation in full detail. Use the Feynman-'t Hooft gauge.
3. Peskin and Schroeder, Problem 16.3.

Please note: This is a *long* calculation. The solution set for this problem set is 50 pages long, of which 35 pages are devoted to this problem. I do assure you that you will learn a considerable amount about how to calculation in gauge theories by doing this problem to the end. (Of course, it might be true that these are things that you never wanted to know ...)