

PHY 5667 : Quantum Field Theory A, Fall 2007

October 18th, 2007

Assignment # 6

(due Thursday November 1st, 2007)

1. Consider the theory of a real scalar field with interaction $H_I = \int d^3x \frac{g}{3!} \phi(x)^3$. Calculate the connected S-matrix element for scalar-scalar scattering to second order in g , doing all integrals. Use the result to calculate the differential cross section for scalar-scalar scattering in the center-of-mass system.
2. Problem 4.2 of Peskin and Schroeder's book.
3. Problem 4.3 of Peskin and Schroeder's book.