

Physics 8048
Problem Set 4, due 10/15/14
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1. Srednicki problem 59.2.

2. Srednicki problem 59.3. For this problem, you could in principle just claim crossing “symmetry”, and write down the solution immediately (see Zee 2nd edition p. 156 for a discussion). However, I want you to have more practice with Feynman rules, and thus I ask you to work out the scattering amplitude (squared) without using the results of 59.2. Note that for Srednicki, s always refer to the sum of incoming momenta squared (with a negative sign), whatever the process is.

3. Justify the expression in Srednicki eq. 62.20.

4. Derive Srednicki eq. 62.33, starting from eq. 62.28. Also, derive Srednicki eq. 62.49, starting from eq. 62.40. Both derivations can of course be found in the book, but it's useful to see if you can reproduce some of the tricks yourself. Also, read chapter 63 to see how to renormalize the cubic vertex.