

## Physics 613

## Homework #8

Due April 7, 2014 at 4:00 EST

- 1:** In expanding the  $g^4$  terms of the S matrix for  $A + B \rightarrow A' + B'$  scattering in ABC theory, we start with expression 10.1. There are many Feynman diagrams which come from all the possible contractions, including the diagram shown in Fig 10.13, shown here. Find the contractions which lead to this diagram, including counting how many ways it arises, and give the analogues of equations 10.2, 10.3, 10.4 and 10.5 for this diagram. Then convert to momentum space, and give the invariant amplitude as an integral over a single 4-momentum. Does the integral diverge?

