

Series 6

I. Four-point Green's function

Consider Eq. (3.30) in the notes and write down all the terms coming from the different ways that $\left(\frac{\delta}{\delta J(w)}\right)^4$ acts on the J s.

II. Diagrams for 2 to 2-particle scattering

1. Draw the diagrams corresponding to the terms of the last exercise.
2. Label all the lines with the correct momenta and find the amplitudes of the respective processes via the Feynman rules.

III. Applying the Feynman rules

Label all the lines with the correct momenta and find the amplitudes to the following two Feynman diagrams:

