

QFT II exercises - sheet 11

If you find a mistake in this exercise first check the website if the problem has been resolved already in a newer version. Otherwise, please email rutger.boels@desy.de.

This set of exercises is to be handed in 7th of July, at the start of the lecture.

Exercise 1

In this exercise I want you to make a very, very brief overview of the standard model.

1. List all fundamental particles and their quantum numbers under the Standard model gauge group $SU(3) \times SU(2) \times U(1)$
2. Provide a *minimal* set of coupling constants that have to be specified to fix the Standard model Lagrangian (warning: you have to count carefully! don't forget to include the CKM matrix and it's neutrino equivalent)
3. How many of these parameters are related to the Higgs boson and it's interactions with other particles?
4. BONUS: which of these couplings have and which have not been measured?