

Flavour Physics

Exercises for Lecture 1

1. Check that you understand that the number of physical parameters in the CKM matrix for N_G generations is $(N_G - 1)^2$.
2. Consider the two diagrams at the top of slide 38 of the lecture.
 - (a) Check that you understand the power counting for ultra-violet and infrared divergences.
 - (b) Check that the infra-red divergent contributions is the same for the diagram in the full theory and in the diagram in which the W-propagator is replaced by O_1 .
 - (c) Show that this implies that the coefficient function is independent of infra-red physics and hence calculable in perturbation theory.