# Theory chapter and preparations

1. Read chapter again
2. Updated background reading
3. Basic questions from Sneha’s email

## Background questions to theory chapter

**What are the fundamental parameters of the SM?**

9 masses

4 parameters of the CKM matrix

3 gauge couplings

2 Higgs potential parameters

1 strong CPV parameter

**How could neutrino masses be accounted for in the SM?**

**What did Kronin and Fitch do?**

OK

**Can you draw Feynman diagrams for and explain the GIM mechanism?**

**How do the Bs gamma measurement diagrams look?**

**How are the CKM element sizes measured?**

All except Vtd, Vts from the W diagrams one would expect (X -> lnu, or X -> Ylnu as appropriate)

Vtd, Vts from neutral B mixing box diagrams, ratio can be measured using SU(3) symmetry

Vub has problems

**How are the opposing sides to gamma in the UT measured?**

Beta:

**How are dD and rD measured for ADS?**

**Principles and thoughts on the Fourier method?**

I can talk about this now. The potential for improvement is small, even in an ideal world. Likely to not be there in the real world. And the approach is extremely non-trivial.

**How is F defined and measured in Ref 82?**

**Are you sure about the correlation of pKs and m2pipi?**

**Be up2date on the SL anomalies (R K, D whatever)**

## Recent papers

**New neutrino CPV result**

OK

**Axions in XENON**

**G-2 status?**

Not out yet – who knows ?

**ICHEP recap**