

## READING QUESTIONS 18 FEB 2020

Hi Iva! I re-read the bottom of 53, and read pages 54, 55, and some of 56.

- (1) After some googling, I learned that over groups, the direct sum  $\oplus$  and the tensor products  $\otimes$  distribute over groups and further it seems that  $\mathbb{Z}$  acts as some kind of “multiplicative identity” for the tensor product over groups. This seems to be used multiple times throughout page 54. For instance, I’m pretty sure that the  $K(X) \otimes K(Y) \approx (\tilde{K}(X) \otimes \tilde{K}(Y)) \oplus \tilde{K}(X) \oplus \tilde{K}(Y) \oplus \mathbb{Z}$  result in the middle of 54 requires using things along these lines. Should I know more about this?
- (2) More googling led me to find this thing called the “Splitting Lemma”, which I think Hatcher assumes I know. It seems this lemma is used multiple times at the bottom of pae 53 and throughout page 54. Is Hatcher using this? If so, should I know more about this?
- (3) Also, Hatcher mentions  $\tilde{K}(S^2)$  is infinite cyclic, which is a very important part of the proof for Bott Periodicity and is used later. I am not sure why this is true. At a glance, it seems likely that this comes from somewhere in the 42 — 51 page range that Hatcher promised me I could skip. So, perhaps I’ll have to dig into that section eventually after all.
- (4) On page 55, there is the phrase “coming from the products  $\tilde{K}(\Sigma^i(X/A)) \otimes \tilde{K}(\Sigma^j(Y/B)) \rightarrow \tilde{K}(\Sigma^{i+j}(X/A \wedge Y/B))$ . However, I am not sure how this ties in with the “relative form of the produt” — isn’t this “relative form” simply come from a change of variables?

Other than these questions, I atually think I understood the reading quite well.