

Answer to Referee 2

[...] The manuscript is very clearly written. The results constitute a valuable contribution to the field of computational non-linear optical spectroscopy. Clearly, this manuscript is suitable for publication in SciPost Physics.

We thank the referee for their assessment and the time spent in carefully reviewing the manuscript.

(1) If the authors would like to improve the discussion of their results on hBN and MoS₂, they might consider to add results on the band-structures and on the (linear) optical spectra. Even though these are pretty well known in the literature, they could be used to visualize the discussion of the computational results. This might improve the readability and clarity of the second-order results in this manuscript.

We follow the suggestion of the referee and added a new figure (Fig. 5) with the linear optical spectra for hBN and MoS₂.

(2) Apart from this, I have only a few typos that should be corrected: - page 3, second line from bottom: "can be accounted for" (insert "be") - page 5, first line: α should have two subscripts - page 5, six lines below Eq. (6): "there may also resonance" (a "be" seems to be missing in the sentence) - page 5, bottom: DFT is the standard acronym for "density functional theory". Using it for "discrete Fourier transform" as well, might cause confusion. - page 6, caption of Fig. 2: "logarithmically sampled" - page 7, 5 lines below Eq. (11): "As the frequencies of the external fields are multiples of ..." (no komma here) - page 7, 6 lines below Eq. (11): no "then" at the beginning of the line - page 10, bottom paragraph: The phrase "In Fig. 4, we report ..." is doubled. - page 12, line 4 of section 5.2: "Similar to what was observed ..." (insert "was") line 5: "... while the weak A and B excitons ..." (delete "the")

We thank the referee for the positive of our manuscript reporting these typos that we corrected in the new version of our manuscript