Interactive comment on "Stratified Kelvin-Helmholtz turbulence of compressible shear flows" *by* Romit Maulik and Omer San

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The authors would like to thank the Referee for reviewing our manuscript and for providing the authors with their constructive remarks and recommendations, which we have found to be very enlightening. We will address their comments in the revised version of this manuscript. Here is a list of our preliminary responses to their comments:

1-) Thank you for these excellent suggestions. We can perform and post-process the suggested plots to examine the effect of density and these shall be included in our revision.

2-) The authors are in full agreement with both reviewers with respect to this comment on studying the spectra of the solenoidal and compressible components of velocity by

using the Helmholtz decomposition. We will follow this suggestion and incorporate it in our revised form.

3-) We will extend our discussion in the revised text about the -6 scaling towards to the cut-off scale. Regarding this topic, we will also look for additional references.

4-) Thank you for these suggested references, they will be added to the next version of the paper in connection with our results.

5-) During our high resolution simulations, we recorded the field variables at time t=1, 2, 3, 4, and 5 (each single snapshot takes about 25 GB disc space in 2D cases). Thanks to our HPC center facilities, we have been able to store them in our Scratch disk space which is directly connected to our compute nodes (i.e., our data will be readily available to us for further post-processing). Therefore, we can run our post-processing scripts and compute/plot desired spectra at time t=4. Our results indicate that the KHI triggers turbulence before t=1 and the domain was sufficiently well homogenized at t=4 implying that our conclusions would still hold true. We will include our results at different times when we revise our manuscript. Furthermore, during the simulations we have stored time series of the domain integrated total kinetic energy, which we will also include in our revised text.

6-) We thank the Referee for pointing out this typographic error. We shall correct this in the revised manuscript.

We would once again like to thank the reviewer for their time and valuable suggestions, which will undoubtedly lead to a significantly improved manuscript.

Sincerely,

Omer San