Dear Editor,

We would like to thank the referee for their careful assessment of our work, and for considering our paper suitable for publication after the points raised in their report are addressed.

In the following, we proceed to address each point and outline the corresponding changes to our paper. The textual changes to our paper are highlighted with colour in the revised version.

The current draft lacks a detailed discussion of how the authors incorporate the effect of primordial magnetic fields in their calculation. Presumably, this is based on the results of Raleganker et al. (Ref. [60]). In the current draft, there is only a brief quantitative discussion in the second paragraph of Section III. Since this is the major point of the paper, a more quantitative discussion with technical details is needed.

We have expanded Section II (pages 2-4) to include a more quantitative description of how the effect of primordial magnetic fields is incorporated into our calculation. The new text clarifies how magnetically induced baryon perturbations, computed following Ref. [60] (Raleganker et al., arXiv:2303.11861), source the growth of dark-matter inhomogeneities through the coupled Boltzmann equations.

Related to the previous point, they should provide more details on how they obtain the results in Figure 3.

We have expanded the manuscript to clarify how the results presented in Figure 3 are obtained. Additional details on the implementation of primordial magnetic fields have been added in Section II (pages 2–4). Furthermore, we have revised the discussion in Section V (see discussion on Fig. 3) to provide a clear illustration of how the magnetic-field parameters (amplitude nd coherence length) evolve in the setup considered here.

Figure 3 shows the benchmark case for generating primordial magnetic fields at the electroweak phase transition. However, this is the least illustrative case among the three benchmark scenarios, since the relevant effect is minor. Why not include the other two cases in Figure 3 for comparison? That would help readers better understand the impact of different generation scenarios and highlight the significance of this work.

We agree that the effect of the primordial magnetic fields is weaker in this case. However, we have decided to keep the electroweak benchmark in Fig. 3 because it most clearly illustrates the distinct turbulent and viscous phases with their transitions well separated in time. In other benchmarks such as the QCD case, these phases overlap more closely, making the evolution less illustrative. For completeness, we include below the QCD case.

Finally, we also changed the author ordering.

We thank the referee again for their valuable feedback, which has led to improvements to the manuscript, and hope that the paper can now be published in its current form.

Kind Regards,

Malcolm Fairbairn, María Olalla Olea Romacho and Pranjal Raleganker.

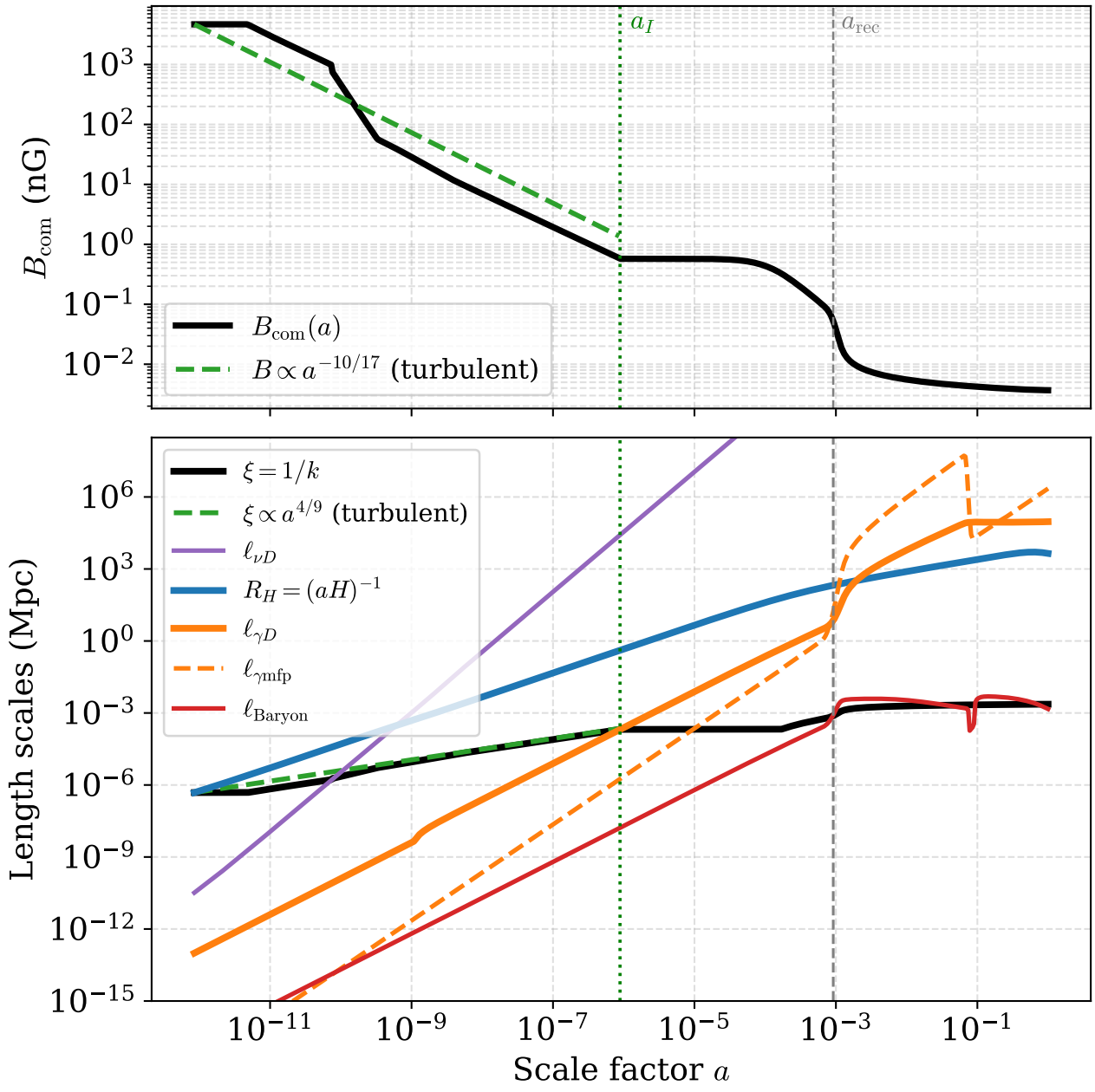

Figure 1: Same as Fig. 3 of the manuscript, but for the QCD benchmark ($T_{\rm PT} \simeq 150\,$MeV). The overall magnetic field amplitude is larger but the qualitative evolution remains comparable to that of the electroweak case.