Dear Editor

We would like to thank the Referee for making the time to review our HEASA 2023 proceedings titled "Modelling very high-energy gamma rays detected from GRB 190829A: A comparative study". We have taken all of the Referee's comments into account, and have responded (in red) after each of them in this response letter, mentioning details of the changes made in the proceedings. We hope you find the corrections and explanations in order.

Kind regards
The Authors
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Reviewer's comments:

This is an interesting paper that discusses the origin of the TeV emission in GRB 190829A. The paper used the code NAIMA to infer the parameters of a single zone SSC model and compares them with a previous work of the authors.

The Manuscript is interesting and relevant. However, in places, it is not sufficiently clear, and it would benefit from a clarification of these issues.
Authors: We have revised the manuscript taking into account the comments. We hope the revised manuscript is now acceptatble for publication.

1. Page 3 Calculation of the minimum injection energy: The ratio between two branches is discussed. It is not clear what the "branches" are and which ratio is calculated. Also, it is not clear why this ratio should be ~ 1. P.S. I presume that I understand correctly that the minimum injection energy is usually denoted by $m_{\rm e}c^2\gamma_{\rm m}$.
Authors: The branches refer to the electron distribution chosen, e.g., a broken power law, before and after the break. From these expressions the minimum injection energy can be determined as $\eta_{\rm e}m_{\rm e}c^2\gamma_{\rm m}$. We rephrased the sentence.

2. Page 3 Calculation of the normalization of the electron distribution. I) How is the width of the shell determined? II) The author mentions (ISM, Wind or average) what is the meaning of Average?
Authors: (I) The normalization of the electron distribution depends on the electron density, as a function of radius, in the surrounding environment times Γ (expression in Barnard et al. (2024) is given as $4n(R)\Gamma$). Thus, the normalization does not dependent on the width of the shell. (II) The average scenario is another scenario considered in NAIMA, and is an ISM scenario but with parameters of the size of the shock that are an average of the wind and ISM cases. We updated the text to make this clear.

3. Page 3 Constrains from the age of the system. The electron's cooling time in the presence of SSC is quite complicated when both synch and IC are taken into account. How is this done here?
Authors: In Joshi & Razzaque (2021) the cooling (γ_c) and maximum (γ_s) electron lorentz factors are calculated taking synchrotron and SSC emission into account. Barnard et al. (2024) re-derived these expressions taking external Compton into account as well. The calculation of γ_c involves comparing the total cooling time and dynamic time. The cooling time includes a Compton Y-parameter that is related to the power of the emission (see Rybicki & Lightman

(2004)). Also, γ_s is calculated by comparing the accelerating time and total cooling time.

4. Page 4 Internal absorption. If it is significant, then the secondary pairs produced can influence the spectrum. I presume that this is not taken into account. It might be worthwhile to mention that the contribution of secondary pairs is neglected. It may also be worthwhile to quote the value of tau among the results.
Authors: The internal absorption is negligible in GRBs at these late times (see Joshi & Razzaque (2021)). For this GRB, NAIMA calculates a value of $\tau \ll 1$ (i.e., $\tau \approx 10^{-2}$). We update the text by including the τ value from the NAIMA code.

5. Page 4 What is the origin of the break in the electron distribution at E_b. From the change in the spectral index, I understand that this is the cooling break. How is this related to the calculation of cooling mentioned earlier (see 3).
Authors: The cooling break is related to γ_c (see 3 for explanation).

6. Page 4 (last paragraph) M dot (last paragraph) is not defined.
Authors: We updated the text by defining the mass loss rate $\dot{M}$.

7. Page 4 (last paragraph): Why is Y chosen to be ~ 1? Or is this a result of the fit?
Authors: In this work we have assumed $Y = 1$ for our code. This is the simplest scenario we have explored in this work. NAIMA computes Y from fitting data. As shown in the Table, that value is ~ 2.

8. Page 5, figure 2 – on the r.h.s., the "fitted" curve doesn't pass through the data. What does this mean?
Authors: The data is fitted with the model by NAIMA using MCMC and it is as best as it could get with the given input parameters.

9. In two places, it is mentioned that NAIMA cannot fit multiwavelength light curves. It is not clear what does this mean. Is it the case that the X-ray and TeV data were not fitted simultaneously?
Authors: The X-ray and TeV data are fitted simultaneously for the SEDs (figure 1 and 2) using NAIMA. However, NAIMA only includes the modelling of the SEDs at a fixed time, and does not include flux versus time (i.e., a light curve) for a given frequency. It is usually better to look at the light curves of the emission at different frequencies as well, when modelling GRB emission.