

Author response to referee #2

The authors thank Anonymous referee #2 for their comments on the manuscript. We will take the comments into account when revising the manuscript. In this document we provide responses to each of the referee's comments (formatted as italics in indented paragraphs). At the end of our answer, we indicate in blue where the changes have been made in the revised version.

Fig. 6e – How the mean ΔR was determined? It seems to be two orders of magnitude larger at times +6 s and +9 s than at other times. If the jet plasma expands to such a large cross-section, it would be strongly rarefied and thus it cannot possess the jet patterns. However, panel 6d shows a large pressure. Where the plasma filling this large volume comes from?

ΔR and similarly P_0 were determined by fitting the Gaussian distribution (Eq. 3 in the manuscript) to the data points at each time step. The Gaussian fit was not appropriate for the two time points +6 s and +9 s because THD observed a higher dynamic pressure than THA, even though THD was farther away from the central axis. Therefore, these values have large errors (indicated by the large gray areas) and should not be considered as a large expansion of the jet perpendicular to the propagation direction. We see the need to describe and explain Figure 6 in more detail.

Line 222 – Fig. 6d in this line is probably a misprint. The perpendicular jet extent is in Fig. 6e.

Line 223 – “But the shape is still quite complex as we also observe contrary increases and decreases of P_0 and ΔR .” What this sentence means? Does it refer to the apparent jet expansion in times +6 and +9 s?

We wanted to point out that the perpendicular size (intersection of the fit with the threshold) depends on the dynamic pressure of the central axis P_0 and the width of the Gaussian fit ΔR . We admit that the discussion is not described clearly enough and might confuse the reader. We see the need to describe our discussions and conclusions on Figure 6 in more detail.

Line 224 – In my understanding, $t_{max} - 9$ s is probably a misprint, a large perpendicular extension is observed at $t_{max} + 9$ s.

This is not a misprint. We wanted to point out that the perpendicular size (intersection of the fit with the threshold) in Fig. 6a is larger than in 6c, although P_0 in Fig. 6c is larger than in 6a.

The description and discussions of Figure 6 were expanded and rewritten in lines 198-222 in the revised manuscript.