

Review of revision of "Ducting of incoherent scatter radar waves by field-aligned irregularities"

{\bf General comments}

The authors have added important and helpful comments and figures to the paper. However, the new text and new figures have also introduced some new questions, discussed below. I'd suggest that the new text be clarified, just as clarification helped improve the original text.

\bigskip

{\bf Specific comments}

My doubts are mainly about the interpretation of figures 2 through 5. This is related to the new figure 4, which adds more clarity to the paper, but also adds some confusion.

Is the peak in the upper right panel of figure 4 the maximum at 150, or is it clipped?

Assuming it is the maximum, does the upper right panel of figure 4 agree with figure 2 in regard to ray density close to the magnetic field? In figure 4, at say 2 km perpendicular, the ratio of peak at 0 km to number of rays at 2 km is maybe 3 or 4 or 5, while in figure 2 it might be $(2/1)^{**2}$ or $(3/1)^{**2}$ i.e. something like 4 to 9. Maybe there are not enough rays in figure 2 to see that clearly.

As mentioned, the density of rays along the field in the upper right panel of figure 4 appears to be about 3 to 5 times larger than nearby rays. Figure 3 suggests an additional increase in that ratio, again by something like 4 to 9, for a total of 12 to 45. Yet in figure 5, right panel, that same ratio, between the number of rays at 0 vs 2 km perpendicular (or ground distance) looks like about 1.1 or 1.2, so about 10 to 40 times less.

Perhaps this has something to do with the solid angle of a ray bundle being inversely proportional to radiated power, but these are pretty small angles so I'm not sure that has a significant effect. Also, looking at the top left panel of figure 4, the beam shape is maybe 0.8 down at 2 km perpendicular, so 0.6 considering 2 dimensions, or about a 1.6 ratio peak to rays at 2 km perpendicular, which can't explain 10 to 40 times.

I think it is clear that in figure 4, as well as in figure 3, the magnetic field lines are assumed to be vertical, as is stated in the caption to figure 2, but it could be mentioned in all three captions.

The additional figures are welcome but could perhaps have a bit more explanation in the captions, and perhaps in the text, to help avoid confusion.