

# Review of: "Slow diffusion around pulsar $\gamma$ -ray halos and its impact on cosmic rays propagation"

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**Potential competing interests:** No potential competing interests to declare.

Dear Editor,

Please find below my reading report of the article entitled: "Slow diffusion around pulsar gamma-ray halos and its impact on cosmic rays propagation".

In his manuscript, the author consider the effect of the slow diffusion region around pulsars affects the contribution of positrons from near pulsars to the AMS-02 data and the new cosmic rays propagation model with a slow disk, then, reexamine the dark matter scenario accounting for the positron excess in the new propagation model.

The amount of work done is consistent, however there are minor comments:

1. In the section, it is appropriate to define the parameters  $D$ ,  $c$ , and  $t$  in order to guide the reader.
2. On page 4, detail the abbreviation d.o.f. from its first appearance
3.  $K_{i2}$  is not defined on page 4.
4. it is appropriate to remove the note on page 6, from my point of view, it is not necessary.
5. Page 5: This sentence requires rephrasing: "In the HAWC paper [1] another important conclusion is that the positron flux contributed by Geminga in the slow diffusion scenario is negligible. This conclusion excludes the possibility that pulsars' contribution accounts for the positron excess [13]."
6. Page 5: This sentence requires rephrasing: "In Ref. [9] we reanalyzed the possible pulsar that can account for the positron excess in the twozone diffusion model. In Fig. 5 we show the pulsar distribution with age and distance to the Earth."
7. Section 3 requires language review.

I am ready to proofread this manuscript once improved.

Sincerely yours

S. KERROUCHI

