Dear Editor

We thank the referees for their careful reading of our manuscript. Below are our responses to their comments in boldface. Changes to the manuscript have been indicated in boldface. For convenience we also upload an updated manuscript without any boldface.

Kind regards

The authors

Layout:

1. Title: 'Modelling' should be all in lower case: 'modelling'.

Done.

2. Author *affiliations* should also be in 11pt font, as stipulated.

I am not sure how to do this as I used the template given by the SAIP website for the completion of a paper.

3. New paragraphs in a section should be indented, with no empty lines, as stipulated.

Done.

4. As stipulated, references to equations in the text should be written only as '(n)' and not 'equation (n)' or 'eq. (n)'. The format 'Equation (n)' should only be used when it starts off a sentence, and 'Eq. (n)' should never be used.

Done.

5. Table captions should appear at the top of the table, not at the bottom.

Table caption moved to the top of the table.

6. Tables should be centred on the page, a stipulated.

All tables are now centred.

7. References to figures in the text should have 'figures' all lower case except when at the start of a sentence, as stipulated. Similarly, references to tables should take the form 'table n', not 'Table n'.

All references are now used in the correct manner.

Content:

The paper is reasonably well-written and the subject matter is new. I have a few comments below

1) The equality sign in equation (3) may actually be a proportionality sign since Q(E) represents particle spectrum and the L on the left hand side is the luminosity.

Equation (3) is in fact correct since Q has the units of /erg/s and since we multiply with E and then integrate over E the units become (erg^2)(/erg/s) = (erg/s). These are indeed the units for luminosity and therefore the equality holds. Technically ϵ is a proportionality constant in the sense that it represents the conversion efficiency of spin-down luminosity to particle luminosity.

2) In Section 2.3 and before equation (8), it will help the reader if it is mentioned explicitly that spherical coordinates have been used.

Done.

3) A description of various data points used in Fig 1 is missing. Data should be described in the caption, such as the instruments used, etc.

The sources of the data in Fig. 1 is now added in the caption of the figure.

4) There are a few typos such as in the first sentence of Section 3, "these" should be "those" and "is" should be "are".

Corrected.

The paper may be accepted for publication with these suggested changes.

Content:

Comments

The authors have presented initial results from a time dependent model of a TeV PWN. This is a very relevant topic as such systems are important very high energy sources. The work appears to be an extension of previous work, with the formalization based around reference [7] in the proceedings. The results as presented in Fig. 1 appears realistic. However, there a number of problems with the formulae as given the the paper. I would recommend the paper is published only after these have been corrected and/or clarified.

Page 1:

1. Introduction:

line 4 “the latter”: the phrase “the latter” is used to refer to the second of two listed items. Rephrase.

Rephrased “A subset of the unidentified sources may eventually ...”

Line 7: “was completed”

Done.

page 2:

line 4: Reference [2]: it appears the author has mixed up references [2] and [7], since [7] would be more appropriate here and elsewhere in the paper.

It was used incorrectly and is fixed. The reference [7] is simply used for the characteristics of the PWN while reference [2] is the is the modelling of G0.9+0.1 which is used as calibration for our model.

2nd paragraph, 2nd line “the TeV brightness (flux)”: non-correlation is noted for the luminosity not flux.

Rephrased.

2nd paragraph, last line “discuss”

Done.

equation (2), (3) (4) and (5): In consistent use of E and E_{\rm e}. Should change E to E_{\rm e} or vice versa

Done.

page 3:

equation (4): This equation is incorrect! I trust that this is just a mistake in the paper; the authors should check/confirm that the formula is correct in the numerical model.

Equation (4) is in fact incorrect but it is simply a typo with the corrected form now given.

Equation (5): to be consistent with equation (4) there should be a negative sign on the right hand side.

Done.

Line before equation (6): “and $\hat{\zeta}$ the collision rate” : here \hat{\zeta} isn't the collision rate; the collision rate is \zeta as given in equations (6). The sentence should be rephrased to make this clear. In fact, equation (6) is not actually necessary, and \hat{\zeta} could be defined immediately.

Done. Equation (6) is removed and \zeta is now defined in the sentence.

Equation (6) to (7): E_0 is undefined.

E_0 is now defined.

Page 4

equations (9) and (10). j is defined differently here to equation (5)

Changed the *j* index in equation (5) to a a *p* index to remove the confusion.

equation (13): \kappa is a function with the argument (\nu/nu_{cr}); the \times is incorrect. The authors should check/confirm that the formula is correct in the code.

This is an unfortunate typo and is correct in the code.

Page 5:

line 5: ...Bessel function of the second kind...

Done.

2nd paragraph, line 4 “both having the same radii”: This is unclear, re-phrase.

Done.

3rd paragraph

line 1: ...those of [7] …

Done.

line 2&3: \dot{P} doesn't match the reported value in reference [10]. Is this supposed to be \dot{P}_0? Please clarify.

Thank you for noticing this error. It was in the paper incorrect and in the code but we fixed this and the results are now shown.

Table 1: since \tau_0 is the initial spin-down time scale, referencing to it as the characteristic time scale is a bit confusing. Would suggest rephrasing for clarity.

Done

Page 6:

References:

[4] and [6]: change apj → ApJ

Done

Some additional errors where noted. These changes are:

- **Grammar and punctuation errors fixed, shown in boldface in the text.**
- **Equation (3) is changed from showing both integrals to only one integral over the outer boundaries as it is implied that 2 integrals is done by Q having two different components.**
- **After equation (5) I defined what n_{\varepsilon,p} is.**
- **In equation (11) the j index is changed to a p index to be similar to equation (5).**
- **Table (1) has been changed and now shows the values for the embedded pulsar that is used in the code.**