



**SDI Review Form 1.6**

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| Journal Name:            | <a href="#">Physical Science International Journal</a>                                                          |
| Manuscript Number:       | Ms_PSIJ_40246                                                                                                   |
| Title of the Manuscript: | Calculation of Temporal Plasmas of XFEL Experiments with a Relativistic Collisional Radiative Average Atom Code |
| Type of the Article      | Original Research Article                                                                                       |

**General guideline for Peer Review process:**

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound. To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

(<http://www.sciencedomain.org/page.php?id=sdi-general-editorial-policy#Peer-Review-Guideline>)



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**PART 1: Review Comments**

|                                     | Reviewer's comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here) |
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| <b>Compulsory</b> REVISION comments |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                               |
| <b>Minor</b> REVISION comments      | <p>Comments about the article "Calculation of temporal Plasmas . . . Atom Code" (Ms_PSIJ_40246).</p> <p>This work is a sequel of those presented in Refs. [1-7], now used to model plasmas with temporal resolution.</p> <p>In brief, I consider that this paper can be published, although has several untidiness, that must be corrected.</p> <p>In first place, it is not clear how the Average Atom Model is constructed, because the authors used the RSHM, useful ion by ion. As I understand, an Average Atom Model, as explained in the book by Nikiforov et al, do not use particular ions but is constructed <i>ab initio</i>, resulting in an average (!) of all ions presents in the plasma...</p> <p>Going to certain details, the introduction can be shortened: lines 47 to 64 are not important; the figure 1 is not illuminating. In the lines 94 to 98 the symbols P, D, S and L were not defined; just they are from line 148; this must be improved.</p> <p>In the line 215 is introduced the formula of Stewart-Pyatt to take into account the plasma effects. There are no arguments about the usefulness of that formula in comparison with other models, as those cited in the paper by Crowley: High Energy Density Physics <b>13</b>, 84 (2014). Other more refined criterium, as the thermodynamic consistency condition (TCC), introduced by Nikiforov et al, are not mentioned. Without this condition appear discontinuities in the thermodynamic properties of the plasma.</p> <p>In the Eq. (7) there are not correspondence between the subscript "e" in <math>D_e</math> and the subscript "i" in the square root.</p> <p>Some Reference must be cited about the origin of formulas 7 to 10.</p> <p>The graphs must be presented with better resolution: the lines are very thin and the characters are not readable.</p> <p>The Tables of pages 18 to 25 are not illuminating: is better replace them with well made graphs.</p> <p>The words "excellent and complete....", presented in lines 195 and 382 should be avoided by the authors...</p> <p>In the Ref. [3], what is UPM? Universidad Politécnica de Madrid?</p> <p>In the Ref. [7], what is the volumen of JQSRT?</p> <p>In the Ref. [8], details are mising.</p> <p>In summary, with these small changes, this work can be published in Physical Science International Journal.</p> |                                                                                                                                                                               |
| <b>Optional/General</b> comments    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                               |

**Reviewer Details:**

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|----------------------------------|-----------------------------------------------------------------------------------------------------------------|
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