



**SDI Review Form 1.6**

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)
<b>Compulsory</b> REVISION comments	<p>The authors present their computational capability of a collisional radiative model to investigate the temporal evolution of populations in plasmas produced in the interaction with XFEL. However, such computational capability has been demonstrated in their published papers listed in the references of this manuscript. If the authors hope to revise their manuscript, major improvements should be made to meet the peer review policy. Following aspects, among other better ideas, should be considered and included in this manuscript.</p> <ol style="list-style-type: none"> <li>1. For neon and aluminium, the authors present more novel studies to show that they meet the peer review policy. There might be many new findings which have not reported on this topic.</li> <li>2. Make comparison with other theoretical results including those of average atom model and more accurate ones using detailed level accounting and unresolved transition array to demonstrate the validity of their model. There are many papers available in the literature.</li> <li>3. It is not necessary to give such detailed tables for the rates obtained by screened Hydrogenic Atomic Model. Even the rates obtained by using more accurate methods are not necessarily appended as they are not the main point.</li> </ol>	<p>Please check all changes in yellow, especially that of lines:</p> <p>Lines 253-255: We can observe also in Figure 3.b, that n-shell populations temporal evolutions <math>P_n(t)</math> at <math>E_{rad}=800</math> eV and <math>P_n(t)</math> n-shells populations temporal evolutions at <math>E_{rad}=1050</math> eV versus 2000 eV, follow perfectly the changes in the electronic temperature temporal profiles.</p> <p>Just let me explain that the real purpose of the paper is to demonstrate that the new code ATMED CR can also compute typical plasmas created in XFEL facilities. Please keep in mind that ATMED CR is a new code and the most advanced collisional radiative average atom model launched with a doctoral thesis on October of 2017. The operating schemes are inside the thesis book and the temporal plasmas are those of Workshop NLTE-10 of 2017, never calculated before with ATMED CR:</p> <ol style="list-style-type: none"> <li>1. I don't try to discover new findings I just try to demonstrate that ATMED can compute the plasmas and that it can be one more code to benchmark results along with other collisional radiative models.</li> <li>2. You all can trust the results because I have a very huge database of plasmas and for all chemical elements the properties are very accurate.</li> <li>3. Don't include the rates if you don't want. I think it is illustrative being a new code to give the tables of rates in case a reader wants to see the order of magnitude, being very accurate statistical averages of quantum mechanical calculations.</li> </ol>
<b>Minor</b> REVISION comments		
<b>Optional/General</b> comments		