



**SDI Review Form 1.6**

**PART 1:**

Journal Name:	<a href="#">Physical Review &amp; Research International</a>
Manuscript Number:	MS: 2012_PRR1_2965
Title of the Manuscript:	Diagnostic of laser induced Li II plasma

**General guideline for Peer Review process is available in this link:**

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

- This form has total 9 parts. Kindly note that you should use all the parts of this review form.



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### PART 2: 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>Each parameter should be clearly defined. In the present form, it is impossible to follow the argument. Simplified schematic and the dimension of the plasma system (both experiment by Doria and the model the authors used) must be presented. The authors argue that at larger <math>d</math> the plasma is cooled down. However, in Fig 1, the temperature (is it in thermal equilibrium in this range? Or which temperature is it?) increases until <math>d = 2</math> mm. The authors have to explain this discrepancy. Why the authors studied the simulation only at the very small <math>d</math> only? The slope of the plots in Fig 1 is very steep when <math>d</math> is small. The reviewer can anticipate that there might be a big difference in the results if <math>d</math> slightly changes. The reviewer asks the authors to provide the similar results when <math>d</math> is ca. 2 mm where the temperature seems saturated. The importance of this contribution should be presented clearly. What can the authors predict using their approach? It may not be exciting if their method can only reproduce the experimental result.</p>	<p>Each parameter is defined and for simplification Eq. 2.5 is written as given in Ref. "Bethe, H.A. and Salpeter, E.E. (1977), Quantum Mechanics of One- and Two- Electron Atoms" see Eq 61.2, which gives the same result!</p> <p>I do not understand what the referee mean by "schematic and the dimension of the plasma system experiment by Doria must be presented" the dimensions by Doria et al. are plasma density plasma temperature and distance from the sample surface at 60 ns time delay!!</p> <p>Similar result (Fig. 8) when <math>d</math> is ca. 2 mm is included.</p> <p>We include this in (result and discussion ):</p> <p>Considering an initial plasma temperature of 8.6 eV gives the velocity of <math>1.99 \times 10^5</math> cm/s at 60 ns time delay. The spatial distribution of the density ratio between Li ions and atoms is obtained in Ref. [Doria06] by using the Saha equation. Two different regions can be defined, <math>d &lt; 2</math> mm and <math>d &gt; 2</math> mm where the electron temperature reaches its maximum value, see Fig. \ref{fig:T}. The first region is a sharp transient in the <math>n_{\text{ion}}/n_{\text{atom}}</math> density ratio, mostly driven by the change in the electron density. However, in the second region the density ratio</p>



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		<p>becomes constant, indicating that the plasma has reached thermal equilibrium between the ion and atom populations, while in this stage the electron density is almost constant and the temperature begins to drop, for more detail see Ref. [cite{Doria06}].</p> <p>The referee has well understood the aim of the articles: it is to develop a theoretical approach which can describe the experiment. It does no matter what the referee thinks about the article, if the referee considers a work of hundreds of researcher all around the word, tenths of running projects and a whole laser induced plasma community for “not be exciting” then I have to consider it only as a personal opinion. Such studies are to represented experiments under extreme conditions (enormous high particle densities), if we succeed to formulate correct mathematical relations for these experiments then one can interpret the physical and chemical interactions taking place in the surface or in the core of the sun.</p>
<b><u>Minor</u></b> REVISION comments	NA	
<b><u>Optional/General</u></b> comments	NA	