**Reply to Reviewer’s Comments (manuscript ID 250852)**

We are grateful to the Reviewer for the thorough review of our manuscript and for the constructive comments. Specifically, the Reviewer pointed out where the manuscript can be improved. The following are our replies and revisions in response to the Reviewer’s comments.

**Reviewer #1**

The manuscript addresses an old problem of anomalous Doppler effect by using the quantum theory and classical dynamics simulations, the resonance condition was identified and found to be strongly influenced by the angular momentum of wave and other effects. The analysis is thorough, compact and strict, and thus can be recommended for publication in*Chinese Physics B* in the present form.

**Reply 1:**

We sincerely thank the reviewer for the positive and encouraging comments. We are pleased to know that the analysis was found to be thorough, compact, and rigorous, and we appreciate your recommendation for publication.

**Reviewer 2:**

This paper presents a simple and effective method for analyzing the resonant processes associated with the Normal Doppler Effect (NDE) and Anomalous Doppler Effect (ADE). By combining quantum theory with angular momentum conservation analysis, it is shown that the parameter m in the resonance condition ω = k ·v + mωce is directly associated with the angular momentum of the resonant wave. Numerical simulations based on the Volume Preserving Algorithm (VPA) further support the quantum results, confirming both the angular momentum correspondence of m and the energy transfer characteristics. I think It's a good paper with innovative methods。analyzing the resonant process from the perspective of classical dynamics and provide a direct comparison between quantum and classical dynamic results. The article is written in a standardized manner with rigorous scientific reasoning. However, the abstract section did not highly summarize the key innovative points of the article. It is suggested to recondense and highlight the different research ideas and key research conclusions obtained by this article compared to other researchers. After minor revisions, it is recommended to be published.

**Reply and Revision 2:**

We thank the reviewer for pointing out the direction for improvement in the abstract. In response, we have rewritten the abstract to make it more concise and to better highlight the novelty of our research approach and the key conclusions. The revised abstract is as follows:

*The fundamental physics of anomalous and normal doppler resonances between electron and electromagnetic waves is analyzed using a quantum model incorporating angular momentum conservation. This work extends prior theory by explicitly linking the resonant integer m to the EM wave's angular momentum quantum number. Numerical simulations based on the Volume Preserving Algorithm (VPA) confirm this relationship. Furthermore, a direct comparison of the energy transfer ratio from translation energy to gyrokinetic energy during resonance between classical dynamics and quantum results is presented and verified numerically.*

We hope the updated version meets the reviewer’s expectations and more clearly conveys the significance of our work.

**期刊编辑部修改意见:**

您的参考文献的格式不符合我刊要求，多条参考文献条目缺乏必要的信息！例如参考文献【4】、【9】、【10】、【18】、【30】、【40】等，请逐条检查、核对，参照(http://cpb.iphy.ac.cn/UserFiles/File/E-ref.pdf)修改、调整。

参考文献的格式顺序为：  
A期刊：全体作者姓名 年 期刊名 卷号页码。  
B书：全体作者姓名 年 书名（出版城市名：出版社名）页码或文献号。  
例如：  
[1] Shahverdiev E M and Shore K A 2005 *Phys. Rev. E***71** 016201  
[2] Wang J S, Feng J and Zhan M S 2001 *Acta Phys. Sin.***50** 299 (in Chinese)  
[3] Bloembergen N 1965 *Nonlinear Optics*(2nd edn.) (New York: Benjamin) pp.1215

**回复：**

感谢贵刊的指正， 我们已经根据贵刊的要求对所有参考文献重新整理，使其满足格式要求。除此之外， 我们还添加了CPB的参考文献，并对每个文献添加了超链接，以便查看原文。整理后如图所示：

