

Review of: "A memory dependent analysis on permeation of non-Gaussian laser pulse through human skin"

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Potential competing interests: No potential competing interests to declare.

Manuscript Title: "A memory dependent analysis on permeation of non-Gaussian laser pulse through human skin"

The authors studied a thermodynamic analysis of laser treatment on human skin and claimed to have adopted a well defined memory dependent hyperbolic type thermoelastic heat conduction model replacing Pennes model of thermodynamics. In order to analyse the thermal shock experienced by the skin layers, an instantaneous point heat source and a non-Gaussian laser pulse are applied on the skin surface to analyse the thermal memory response into the skin-layers. Two different types of laser beams are considered to validate the thermoelastic observations with the optical results.

The problem is interesting, research and the results are important, but the paper needs to address the following queries.

1. The use of the governing equations: law of conduction, Pennes model, second law of thermodynamics etc. are not new to bio-heat modeling, and it has been studied previously. So it is recommended that the authors demonstrate/compare the difference to other existing works to highlight the novelty of this manuscript. It would be good that the authors consider one paragraph for review of the related works, one paragraph to discuss their differences to the purposed work, and one paragraph to highlight the novelty or benefits/improvements achieved by the proposed method.
2. In governing equations: what "S" represents?
3. In 2nd paragraph of section 3rd, some anatomical assumptions are made but no justification or reference has been provided.
4. The authors should include scientific reasoning for graphical results in details.
5. Conclude the introduction with a brief summary of the main points and a clear outline of the structure of the article.
6. When referencing previous studies, mention their findings and how they relate to or contrast with the current study's findings.
7. It's important to acknowledge any limitations of the study and suggest potential areas for future research/improvements/up-gradations .
8. The literature survey might be improved on adding some relevant references as:

<https://doi.org/10.1155/2020/3154908>

<https://doi.org/10.1016/j.jare.2020.05.004>



<https://doi.org/10.3390/math10203820>

<https://doi.org/10.1016/j.csite.2023.103491>

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