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.

The manuscript presents a memory dependent hyperbolic type thermoplastic heat conduction model for laser treatment on human skin. The authors show the temperature and stress distributions in the bi-layer skin under an instantaneous point heat source and a non-Gaussian laser pulse. In addition, they demonstrate the reliability of the proposed method in solving complex problem at different parameters. The research is relevant to the field of Qeios journal and may be accepted for publication after incorporating all the suggestions by the reviewer. However, various items must be addressed to enhance the quality of the manuscript.

1. The introduction section is weak. Various researchers have reported the analytical solutions of hyperbolic heat equation in 2D and 3D already. It is better to talk about them from different articles. Authors are referred to some studies done in this regard. For completeness, suggest citing more previous works: e.g.

- Talaee, M. R., & Kabiri, A. L. I. (2017). Analytical solution of hyperbolic bioheat equation in spherical coordinates applied in radiofrequency heating. Journal of Mechanics in Medicine and Biology, 17(04), 1750072.
- Kabiri, A., & Talaee, M. R. (2021). Thermal field and tissue damage analysis of moving laser in cancer thermal therapy. Lasers in Medical Science, 36, 583-597.
- Talaee, M. R., Kabiri, A., & Khodarahmi, R. (2018). Analytical solution of hyperbolic heat conduction equation in a finite medium under pulsatile heat source. Iranian Journal of Science and Technology, Transactions of Mechanical Engineering, 42, 269-277.
- Kabiri, A., & Talaee, M. R. (2019). Theoretical investigation of thermal wave model of microwave ablation applied in prostate Cancer therapy. Heat and Mass Transfer, 55, 2199-2208.
- Kabiri, A., & Talaee, M. R. (2021). Analysis of hyperbolic Pennes bioheat equation in perfused homogeneous biological tissue subject to the instantaneous moving heat source. SN Applied Sciences, 3, 1-8.

1. Although the presented manuscript is mainly focused on mathematical analyses, the authors are suggested to pay attention to describe more physical insights of the obtained results. The discussion parts are too short. Discussion of the results will help the reader to understand the results presented in the figures.
2. Conventional thermal therapy modeling normally includes the following steps: calculation of the temperature increase using various heat transfer equations, and calculation of the thermal damage. Therefore, local tissue damage should be determined by computing the value of the damage integral. The Arrhenius damage model should be used to estimate lesion size from the temperature evolution computed at any point. Authors are suggested adding tissue

damage distributions in various parameters.