

Answers on the review of Anonymous Referee #2

The authors are grateful for the perusal and important suggestions provided by the reviewer. All the suggestions have been taken into account and the manuscript has been changed accordingly.

1. Please give the estimates of wave frequencies and characteristic time of impact and define concretely the scopes of the model.

This article covers just a topic of energy dissipation during wave propagation in an infinite body, so no impacts are considered.

2. Kelvin – Voigt model is model of a medium, not for wave propagation. Moreover, as is generally known, this model does not satisfy the causality condition, or the fundamental Kramers–Kronig relations [Aki K. and Richards P.G. Quantitative Seismology. Theory and Methods, Vol.1. W.H. Freeman, New York. 1980]. Please add a comment.

The authors would like to thank you very much for the remark about “wave propagation”. Kelvin-Voigt model is used in this paper to analyse energy dissipation during wave propagation. That has been changed throughout the paper.

3. Please emphasize the differences with the literature [Anagnostopoulos, S.A. Equivalent viscous damping for modeling inelastic impacts in earthquake pounding problems. Earthquake Engineering & Structural Dynamics, 33(8), 897–902., doi:10.1002/eqe.377, 2004], particularly touching Eq. 14 and Fig. 2.

The main difference from the cited paper is that in our model, loss of energy occurs only at the neutral point; therefore, the equivalent linear damping function can be used only for times considerably higher than the period of free vibrations. On the other hand, in the cited article damping happens constantly during the impact of two bodies and each impact can be represented by an equivalent viscous damping.

4. There is no necessity to give all the solutions of Eq. (8). The first equation of Eq. (9) is sufficient.

They were included for completeness.

5. I would recommend the authors to pay attention to the problems concerning the correct accounting of the energy dissipation at impacts as in [Hunt, K. H., & Crossley, F. R. E. (1975). Coefficient of Restitution Interpreted as Damping in Vibroimpact. Journal of Applied Mechanics, 42, 440.]

Yes, we calculate the loss of energy by the same operation and the Eq. (16) covers all impacts simultaneously.