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Nonlinear Processes in Geophysics
Discussions

Interactive comment on "Continuum model of wave propagation in fragmented media: linear damping approximation" *by* Maxim Khudyakov et al.

Anonymous Referee #2

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Review of NPG-2017-3, by Maxim Khudyakov, Arcady V. Dyskin, and Elena Pasternak, "Continuum model of wave propagation in fragmented media: linear damping approximation"

The authors have presented a model of wave dissipation at wave propagation in a fragmented medium with accounting of impacts. This problem is of interest for researchers in the area of wave propagation in geomaterials. The paper is worth to be published after taking into account the items that follow. 1. Please give the estimates of wave frequencies and characteristic time of impact and define concretely the scopes of the model. 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. 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. 4. There is no necessity to give all the solutions of Eq. (8). The first equation of Eq. (9) is sufficient. 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.]

Please also note the supplement to this comment:
http://www.nonlin-processes-geophys-discuss.net/npg-2017-3/npg-2017-3-RC2-supplement.pdf

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