**Answers on the review for NPG-2016-80 by M. Kuznetsova, E. Pasternak and A. Dyskin, "Analysis of Wave Propagation in a Discrete Chain of Bilinear Oscillators"**

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

**Suggestions and alterations**

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| **1** | Even the basic boundary condition is not clear. The notation $H$ is not defined. If is the Heaviside step, $F$(t) is non-zero for all $t < 2\pi / \omega$, including $t < 0$. Evidently, only t >0 is considered but it is never explicitly mentioned. Usually such impulses are represented as a difference of two Heaviside steps. |
| | Corrected in Sect. 4 and Sect.5: $f(t) = \pm f_0 H(t) H\left(\frac{2\pi}{\omega} - t\right)\sin(\omega t)$ <br> $f(t) = \pm f_0 H(t)\sin(\omega t)$ |
| **2** | Since the wave changes its sign, then according to (1) the solution can not be analytical at Delta$U$ = 0, and some matching conditions should be added at these points, at least for figure 3 where the front and tail of the impulse meet at some point. |
| | As pointed out in the paper we only consider a chain of bilinear oscillators. Therefore it is just a system of ordinary differential equations with discontinuous coefficient at the function. This can be solved by usual numerical schemes as shown in numerous literature cited in Introduction. Furthermore, direct comparison with numerical solution (with step over x equal to 1) of the corresponding partial differential equation corresponding to the continuous rod demonstrate that the solutions are close. This indicates the possibility to solve the corresponding partial differential equation numerically dispite the presence of discontinuous coefficients. |
| **3** | For sec.6 where a continuous "rod" is considered. Since the numerical discretization (delta x =1) is the same as for the previous mass-spring model is used, what is the real difference between the two models? No surprise that in figs. 7 and 8 the results are identical. |
| | We added the following sentence at the beginning of Sect. 6: <br> "In this section, we want to compare the numerical results for the discrete chain of bilinear oscillators with its homogenised counterpart, a continuous 1D bimodular rod, subjected to the same boundary conditions. This will be done in order to check whether a numerical solution of the corresponding continuous problem can be accurate." <br><br> We then added the following sentence at the end of subsection 6.2. <br> "The direct comparison with numerical solution (with step over *x* equal to 1) of the partial differential equation corresponding to the continuous rod demonstrates that the solutions are close. This indicates the possibility to solve the corresponding partial differential equation numerically despite the presence of discontinuous coefficients." |
| **4** | Finally, what is the main physical result of this article? It is obvious that if the front propagates faster, the pulse is elongated (Fig. 2) and vice versa (fig.3). Can the authors add at least one physical system with specific estimates as an example? |

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| | We added the following in the next-to-last paragraph of the introduction:<br>“The purpose of the present work is to study the response of a discrete system of bilinear oscillators loaded by an external harmonic force. Attention has been given to a case of the large difference between spring stiffnesses in tension and compression.”<br><br>We also added the following sentence at the end of the first paragraph of the introduction.<br>“Layered rocks and rocks with a single set of open fractures obviously exhibit bilinear properties whereby the modulus in compression is higher than the modulus in tension due to the closure of interlayer gaps and fractures in compression.” |