



SDI Review Form 1.6

Journal Name:	<u>British Journal of Mathematics & Computer Science</u>
Manuscript Number:	Ms_BJMCS_24446
Title of the Manuscript:	The behavior of two coupled mechanical oscillators in non-linear fields and the possibility of obtaining controlled halts
Type of the Article	Original research papers

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Compulsory REVISION comments	1. linear elastic field??? what do you mean?? the field of an oscillator?? please comment. 2. line 147 why you choose this form and not one other, please comment. 3. What are the informations and the need of figures 1 and 2?? please describe!!! 4. In the introduction describe in more details the need and the possible applications of the system. 5. Make a comparison between the theoretical results and the experimental. Describe the experimental results in a more detail. Show the layout. 6. Line 318: how this active transformation is derived??	Dear Sir! Thank-you for your feedback and comment. On those highlighted by you, we can mention the following: 1. The term “ linear elastic field” refers to the theoretical model of the linear force that shapes the compressive force of a ideal spring. The expression for the field of an oscillator is wrong and we will replace it. 2. At line 147 we have chosen that form of the quasi- diagonal matrix, because it is a matrix similar with the matrix that we want to replace. The transformation must be quasi diagonal because we rely in the preparation of this article on a theoretical result presented in reference 2, which has exactly that form. 3. We presented in figure 1 an outline of the studied mechanical system, consisting



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		of two bodies with mass m , two springs and three permanent magnets that are arranged in the configuration as it is described in the figure. In Figure 2 we presented a comparison of the minor difference between two types of mathematical functions, one being given and the second one being found. 4. The application of this article is a thermodynamic engine by original design, that exceeds the study of this work . 5. There is an almost perfect concordance between the experimental and theoretical graphs , and this will be further described in the revised version of this article. 6. At line 318 , it is not derived , it is applied the reverse vector transformation. It means to write individual decoupled solutions, in function of the vectors from vector base to which the transformation has been done.
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Minor REVISION comments	1. lines 76-95 it can be written in a more compact way. 2. Line 120 What is E_n?? 3. Pages 6-7 These manipulations are basic linear algebra and matrices manipulations so you may write it in a more compact way. From equation 18 you may go directly to equation 34. 4. References 10 and 11 had the same volume and pages you must correct it. 5. lines 238- 255 and 296-315 the differential equation has a well known solution so you may refer to it without all the further analysis that you do. 6. line 316 a) is missing in sines! 7. pages 12-13-14-15-16-17 (the numerical example) may be written in a more compact way because is a repeat of the theoretical analysis that you do in the previous section.	1. If possible we will rewrite the lines 76-95 in a more compact. All these have been detailed in this mode because we wrote in detail the forces acting on the mechanical system. 2. We wrote wrong line 120 . We will replace E_n with G_n . 3. We will try to make the required simplifications. 4. We will correct the references 11 and 12. 5. At the specified lines, the linear differential equations have well known solutions, but it was necessary to highlight the forms of their pulsations, interconnected with the constants of our system. 6. We will correct what is missing from the line 316. We refer to two components – one in trigonometric sine and the other one that oscillates in elliptic sine. If we combine them in the indicated structure, then we obtain the indicated effect. 7. Repeating the same algorithm to treat both analytical and numerical application was made to reinforce and illustrate the proposed model , repeating only what is absolutely necessary.
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<u>Optional/General</u> comments	1. The paper needs to be rewritten mainly in a more compact way. 2. what is the scientific contribution of the work apart from the application of the mathematical method to solve the system of differential equations???	1. We will try , as much as possible, to rewrite some parts of the work in a more compact way. 2. The scientific contribution is as follows: The effect was firstly experimentally achieved and then we tried to explain it from scientific point of view, to find the analytical solutions, that actually are the solutions of a small experimental case. However, the solutions can be implemented in the found form within a broader application to interconnect the phenomenon with other heat transfer phenomena. This was the reason to find an analytical formula, nonexistent in the specialty literature. Thank you for your suggestions. Best regards!
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