



SDI Review Form 1.6

Journal Name:	Advances in Research
Manuscript Number:	Ms_AIR_27621
Title of the Manuscript:	Approximate Solutions of Nonsmooth Systems via Generalized Euler-Lagrange and Hamiltonian Equations
Type of the Article	Original Research Article

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.

To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

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PART 1: Review Comments

	Reviewer's comment	Author's comment <i>(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)</i>
Compulsory REVISION comments	This paper generalizes the Euler-Lagrange equations for systems of non-smooth functions. This paper addresses an important problem and seems to be technically correct; however, it is in serious need of a careful proof-read of word choice and syntax, etc. I especially appreciate the inclusion of test problems by the author(s), but the paper would also benefit from a bit clearer explanation of two of the test problems, Example 5.1 and Example 5.2, and a completion of these examples. After these revisions I recommend the paper be published. With respect to Example 5.1 and 5.2, I have the following concern: In Example 5.1 it is not clear to me what is the connection between the sum $\sum a_j \cos(\pi j \dot{x})$ to L, x, etc. I think the derivative of L with respect to $\dot{x}$ is the sum $\sum a_j \cos(\pi j \dot{x})$ and that this relationship is used to define the a_j's, but I am not completely sure. This should be clarified in this example. In Example 5.2 I think the sum $\sum a_j \cos(\pi j x)$ is the derivative of L with respect to x and $\sum b_j \cos(\pi j \dot{x})$ is the derivative of L with respect to $\dot{x}$, but again I am unsure and the appropriate relationship should be stated explicitly in the examples. You state in section 1 that the method you present is "practical", but a solution containing an infinite sum (as is	



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	Examples 5.1 and 5.2) is hardly “practical”. Presumably the practical solution is to approximate the infinite sum with a finite sum. In that case the solution of these problems should suggest a number of terms to use in a practical application of solving these examples. Once this is done, explicitly give the a_j and b_j values that result. When this is done, the GEL equation in both of these examples will not produce an exact solution to the original problem. The next step should be to solve the original equation numerically and the GEL numerically and compare (e.g with a plot or other method) the results for $x(t)$ in each case. In this way you will have demonstrated the ability of your method to give a “practical” method of solving the given problems.	
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Minor REVISION comments	With respect to the word choice problem, I noted the following words misused or misspelled (there are probably more): Abstract: constrained for constrained Section 1: extermizing for extremizing? appliacation for applications dose for does Section 3. not for no taught for thought Rockfallar for Rockafellar Section 3.2 appecified for specified Section 4 continuouse for continuous matrixes for matrices requaires for requires coefficients for coefficients With respect to the syntax problems, I noted the following problems: Section 1: Other generalized derivatives have been proposed...are not practical (run on sentence) We present [a] different definition.. (The "a" is missing.) "by assumption" should be "by assuming" One way, "One" is not the beginning of a sentence and should not be capitalized. "we need to impose another conditions ..." use the word "other" instead of the word "another". "that presented by [Kamyad.." should be "that was presented	
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	by [Kamyad...] where the derivative [is] replaced by ... ("is" is missing.) "We proposed necessary.." should read "We propose necessary.." Section 2: "we utilize it" should read "we use it" Section 3: "that there are not such..." should read "that there are no such..." "CRockafella,larke et al." (something is wrong here, but I can't fix it) Section 3.2 "We wants to find..." should read "We want to find..." "x that satisfy the boundary.." should read "x that satisfies the boundary.." I think the script small L following equation 3.5 should probably be kappa I think lambda in Theorem 3.6 is only a constant in x, but not in t, like it is in Theorem 3.7. "f" in Theorem 3.6 is not defined in the theorem statement.	
<u>Optional/General</u> comments		

Reviewer Details:

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