Review of: "Tsallis Entropy applied to microfluidic channels analysis"

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Potential competing interests: No potential competing interests to declare.

In the paper, authors present ***Tsallis Entropy applied to microfluidic channels analysis***. Various examples are given. This work investigated the possibility to describe the fluid flow in a microchannel from a thermodynamic point of view, exploring the possibility to evaluate the presence of obstacles (or, more in general, geometry imperfection) and their influence on the fluid. Tsallis entropy concept was employed. This form of entropy was introduced in 1988 by Costantino Tsallis as a basis for generalizing the standard statistical mechanics and as a generalization of the standard Boltzmann-Gibbs entropy. Inspired by nature, where storing information is an intrinsic ability of natural systems, here we investigate the capability of interacting systems to transport/store the information generated/exchanged in the interaction process in the form of energy or matter, preserving it over time. In detail, here we test the possibility to consider a fluid as a carrier of information, speculating about how to use such information. The final goal is to demonstrate that information theory can be used to illuminate physical observations

Detailed comments and questions are provided below:

Issue1:

The current work has some weakness and vague grammatical mistakes and lack of enough literature support are significant concerns.

Issue2:

English of the entire manuscript needs to be improved for clarity and cohesiveness.

Issue 3. Some new references about research subject should be added entirely in the reference list and cited adequately in the text such as following. As it stands, the goal of this review is not evident, and I suggest that it is better organized.

- Application of Kelvin's approach for material structure of CNT: Polynomial volume fraction law. Structural Engineering and Mechanics, *An International Journal*
- FG-based computational fracture of frequency up-conversion for bistablity of rotating shell: An effective numerical Scheme. Advances in Concrete Construction, An International Journal.
- Controlling of ring based structure of rotating FG shell: Frequency distribution Advances in Concrete Construction, An International Journal.

- Structural stability of laminated composite material for the effectiveness of half axial wave mode: Frequency impact. Advances in Concrete Construction, An International Journal.
- Vibration analysis of single-walled carbon nanotubes using wave propagation approach.*Mechanical Sciences*, 8(1), 55–164.
- Effects of ring supports on vibration of armchair and zigzag FGM rotating carbon nanotubes using Galerkin's method, Composites Part B:Engineering (2019), Volume 163, 15 April 2019, Pages 548-561.
- Rotating response on the vibrations of functionally graded zigzag and chiral single walled carbon nanotubes*Applied Mathematical Modeling*, 75, 506-520, **2019**.
- Mass density effect on vibration of zigzag and chiral SWCNTs. Journal of Sandwich Structures and Materials.
- Vibration characteristics of zigzag FGM single-walled carbon nanotubes based on Ritz method with ring-stiffeners. Indian Journal of Physics.
- Analytical vibration of FG cylindrical shell with ring support based on various configurations Advances in Concrete Construction, An International Journal.
- Accurate compact solution of fluid-filled FG cylindrical tube inducting fluid term: Frequency analysis, Journal of Sandwich Structures and Materials.

Issue 4:

Novelty is not clear. Please write gain this section.

Issue 5:

Eq. 1 is without reference

Issue 6:

Prepare a list of abbreviation, if possible.

However, in my opinion this paper needs minor revision.

Issue 7:

Validation cab be made from following published articles, if possible.

- On mixing the Rayleigh-Ritz formulation with Hankel’s function for vibration of fluid-filled Fluid-filled cylindrical shell. Advances in Computational Design, *An International Journal*".
- “Runge-Kutta method for flow of dusty fluid along exponentially stretching cylinder. Steel and Composite Structures, An International Journal
- “Energy effects on MHD flow of Eyring’s nanofluid containing motile microorganism” Advances in Concrete Construction, An International Journal.
- Interaction of Casson Nanofluid with Brownian motion: Temperature profile with shooting method.

Issue 8:

Why do you only provide analysis for specific boundary condition and not for a range of boundary conditions? I guess, it is probably because of the limitation of your modeling. If not, I recommend developing it also for the other boundary conditions.

Issue 9.

There are many sentences with no reference. There is a need for referencing from "reliable" and "fundamental" papers or textbooks. The Conclusions section should be improved. The main contributions and outcome of the article should be highlighted.

Issue 10:

I suggest to authors that present more explain about the algorithm. I think this is a point the author(s) should mention and discuss. The technique is described too quickly, and a reference to an internal report is not sufficient for a reader.

Issue 11:

The language, sentence formation and grammar of the entire manuscript need to be improved for clarity and cohesiveness. It is better to check the English by a native speaker.

Issue 12:

Please compare the results with above said references for the validation of paper.