

Peer Review

Review of: "Quantization of Nonlinear Transmission Line Dynamics With Noise: Some Remarks on Noise in Quantum Field and Quantum Neural Network Theories"

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Dear Authors, please try to address my notes and remarks, as follows:

The proposed paper is of high importance and presents a high amount of higher mathematics, related to partial differential equations for solving problems related to the analysis of a transmission line with additional inductances, capacitances, and memristors. The overall quality and presentation are very good. I have only several remarks and pieces of advice:

1. Try to include an Introduction and express in it the basic motivation, purpose, and tasks of the proposed paper. Explain in one or two sentences the novelty of the paper compared to other papers on the topic. At the end of the Introduction, try to include several sentences about the rest of the paper – describe the respective sections and their content.
2. To improve the quality of the proposed paper, try to include, if possible, several figures and tables related to the discussed content. For example, at the beginning of the first Section, try to present a simple schematic of the described model of the fragment of the transmission line with inductors, capacitors, and memristors.
3. The authors consider memristors in the discussed transmission line to address the memory effect and some switching properties. In this sense, include, if possible, a simple model of the considered memristors. For example, the simplest memristor model of Strukov-Williams ('The missing memristor found, 2008, Nature') is a system of equations: 1) $v=i*M(x)=i*[r_{on}*x+r_{off}*(1-x)]$; 2) $dx/dt=k*i*x*(1-x)$; where M is the total resistance of the memristor, x is the state

variable in the range $[0,1]$, r_{on} and r_{off} are the on-state and off-state resistances, dx/dt is the time derivative of the state variable, k is a physical constant, and $x^*(1-x)$ is a simple window function for the restriction of the state variable x in the interval $[0,1]$. For more information, the authors could consider some of the latest publications on memristors and their modeling, for example:

4. (2024), <https://doi.org/10.1016/j.chaos.2024.114923>

5. (2024), <https://doi.org/10.3390/electronics13050893>

6. (2015), https://doi.org/10.1162/NECO_a_00694

7. (2024), <https://doi.org/10.1016/j.chaos.2024.115361>

8. (2023), <https://doi.org/10.1080/14686996.2022.2162323>

9. The authors present only four used references. If possible, try to use several more references related to the content to make the paper of higher scientific value.

10. Try to number the used formulas in the PDF version of the proposed paper, according to the Journal template.

11. Try to include several keywords after the abstract, according to the Journal template.

12. A minor English grammar and spell check is required.

Recommendation – **Minor Revision**

Declarations

Potential competing interests: No potential competing interests to declare.