Review of: "Periodic second-order systems and coupled forced Van der Pol oscillators"

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Potential competing interests: No potential competing interests to declare.

The article "Periodic second-order systems and coupled forced Van der Pol oscillators" by Feliz Minhos and Sara Perestrelo offers a valuable contribution to the field of nonlinear coupled planar systems. The authors present a well-structured and thorough investigation into the existence and localization of periodic solutions, particularly focusing on second-order systems without the necessity of periodicity in the nonlinearities.

One commendable aspect of this article is the application of innovative techniques, including a variation of the Nagumo condition and Topological Degree Theory. These tools are effectively employed to establish the existence of periodic solutions, showcasing the authors' proficiency in theoretical methodologies. Furthermore, the localization tool based on orderless upper and lower solutions with translations demonstrates a novel approach, expanding the range of admissible functions for possible solutions.

The choice to apply the proposed methodology to a system of two coupled Van der Pol oscillators with a forcing component adds practical relevance to the study. The article not only formulates theoretical frameworks but also illustrates the applicability of the results to a specific real-world problem, enhancing the practical significance of the research.

The clarity and organization of the article are noteworthy. The authors systematically present the necessary definitions, lemmas, and the main theorem, making it accessible to readers. The inclusion of a numerical example further aids in understanding the applicability of the proposed methodology.

The conclusions drawn in the article effectively summarize the key findings and highlight the significance of the research. The authors acknowledge and address the limitations of existing literature, positioning their work as a valuable addition to the field. Additionally, the extension of the study to a generalized system, with potential applications in various real-case scenarios, underscores the broader impact of their research.

In conclusion, Feliz Minhos and Sara Perestrelo's article provides a comprehensive and innovative exploration of periodic solutions in second-order non-linear coupled planar systems. The article's well-crafted structure, theoretical rigor, and practical application contribute to its overall significance in advancing understanding within the field.