

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

Vladimir Stojanović¹

¹ Lakehead University

Potential competing interests: No potential competing interests to declare.

The paper titled "Periodic second-order systems and coupled forced Van der Pol oscillators" by Feliz Minhó's and Sara Perestrelo presents a study on second-order non-linear coupled planar systems, specifically focusing on the existence and localization of periodic solutions without requiring periodicity for the non-linearities. The methodology is based on a variation of the Nagumo condition and Topological Degree Theory, and the paper applies these findings to a system of two coupled Van der Pol oscillators with a forcing component.

Review:

Temporal Expansion of Results: The paper's results, particularly those represented in diagrams, would benefit from a temporal expansion. Extending the time interval of the study could provide a more comprehensive understanding of the system dynamics over a longer period.

Comparative Analysis with Numerical Results: The paper could be enhanced by comparing the results obtained through the presented methodology with numerical results derived from commercial software packages. This comparative analysis would offer a valuable validation of the theoretical findings and methodologies used.

Reference List Augmentation: The reference list should be updated to include more recent works on coupled oscillators. Specifically, the inclusion of papers like "Stability and vibrations of an overcritical speed moving multiple discrete oscillators along an infinite continuous structure" would not only strengthen the current reference base but also suggest potential directions for future research.

Further Research Suggestions: Building on the provided references, the paper could propose further research directions, such as exploring the stability of specific types of coupled oscillators. Additionally, considering the problem of coupled oscillators in various other contexts, as discussed in works like "Vibrations and stability analysis of multiple rectangular plates coupled with elastic layers based on different plate theories," could provide a broader application scope for the methodologies developed.

In summary, while the paper presents significant findings in the field of coupled oscillators, enhancements in terms of temporal analysis, comparative studies, reference augmentation, and future research directions could greatly enrich its contribution to the field.