

Review of: "Structure-Preserving Model Order Reduction of second-order systems using Iterative Rational Krylov Algorithm"

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Potential competing interests: No potential competing interests to declare.

The authors of this paper tried to show a new algorithm of model order reduction of second order systems, but the paper is not well presented to display this idea at all. Not only the written of this paper needs to be improved, but also more work needs to be done to illustrate the contribution of this paper clearly.

Firstly, a lot of background about model order reduction of first and second order models need to be introduced, such as the details of IRKA for first order models, and classical structure-preserving MOR methods. And the motivation of this paper needs to be discussed with more details.

Secondly, the main part of the algorithm is missing in this paper. After the introduction, authors didn't show how to combine the IRKA and SPMOR to get the new algorithm. It's hard to verify the contribution of this paper.

Thirdly, there is no theoretical analysis of the new algorithm and no comparison of the new one with the classical methods, both of which are necessary to show the advantage and disadvantage of the new algorithm.

Last but not the least, the numerical experiments presented are not convincing to show the efficiency of the new algorithm. More explanations of how to conduct and to interpret the experiments are required.