

Review of: "On a New Two Point Taylor Expansion With Applications"

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Potential competing interests: No potential competing interests to declare.

1. The abstract provides a clear overview of the manuscript, introducing the new two-point Taylor expansion and its applications. However, it would be beneficial to include a brief statement about the significance or motivation behind introducing this new expansion.
2. The author mentions that the new two-point Taylor expansion is "slightly different" than the classical definition. Providing specific details on the key distinctions and advantages of the new expansion would enhance the reader's understanding.
3. The abstract briefly mentions comparisons with single-point Taylor expansions and classical two-point Taylor expansions reported in the literature. Providing more specific details on the existing literature and the points of departure for the new expansion would enhance the context.
4. The abstract mentions applications of the new expansion to functions with finite and infinite radii of convergence. Elaborating on the types of functions or real-world problems for which this expansion might be particularly useful would add depth to the abstract.
5. The author discusses the convergence intervals and their dependence on the reference points. It would be helpful to provide a brief explanation or rationale behind why the convergence intervals change based on the relative positions of the reference points.
6. In the introduction, it is mentioned that the two-point Taylor expansions better approximate real functions when truncated. Providing more insights into why this is the case or presenting examples would strengthen the argument.
7. The introduction cites various applications of two-point Taylor expansions in finance, complex domains, and nonlinear partial differential equations. It would be beneficial to briefly highlight the success stories or specific problems where two-point expansions have demonstrated superiority.
8. The introduction refers to a "slightly different new version" of two-point Taylor expansions but doesn't immediately provide the mathematical form. It would be clearer if the new expression is introduced earlier in the text.
9. The discussion on convergence intervals in Section 3.1 is insightful. However, adding a brief conclusion or summary of the findings would enhance the section's clarity.

10. Tables and figures are appropriately used to illustrate convergence intervals. However, the figures lack axis labels and legends, making it challenging to interpret the information. Adding labels would improve the clarity of the visual representations.

11. The discussion on the advantages of two-point Taylor expansions over single-point expansions is intriguing. Providing more concrete examples or scenarios where these advantages are particularly pronounced would strengthen the argument.

12. The comparison of two-point Taylor expansions and single-point expansions in Section 3.2 is well-documented. Including additional quantitative metrics or error analysis to compare the accuracy of the two methods would enhance the evaluation.

13. The discussion on the ability of two-point Taylor expansions to approximate functions on both sides of a singular point is interesting. Providing a brief discussion on the practical implications or scenarios where this feature is crucial would add depth.

14. The application of the proposed two-point expansion to solve a differential equation is a valuable addition. However, a more detailed explanation of the chosen differential equation and why it serves as a good test case would improve the section.

Conclusion: The article is very interesting and adds value to the field. After addressing the above-mentioned comments, it will be perfect for publication.