Review of: "New Computational Methods Using Seventh Derivative Type for the Solution of First Order Initial Value Problems"

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Potential competing interests: No potential competing interests to declare.

The authors present an innovative approach using the seventh-order derivative implicit block method to solve first-order ODE problems, demonstrated through benchmarked examples and applications. This constitutes a valuable research outcome and is recommended for publication pending revision.

The manuscript is well-constructed. However, the reviewer suggests that the authors double-check for typos and provide abbreviations where possible, as indicated below.

Abstract

1. “SIR”. Suggested change: Provide the abbreviation for “SIR”.
2. “In addition, it is observed that uneven and positioning of collocation points greatly influence the efficiency and accuracy of numerical methods.” Suggested change: “In addition, it is observed that the uneven distribution and positioning of collocation points greatly influence the efficiency and accuracy of numerical methods."

Introduction

1. “ODEs”. Suggested change: Provide the abbreviation for “ODEs”.
2. “IVPs”. Suggested change: Provide the abbreviation for “IVPs”.
3. “More recently, are the applications of multi-derivatives block methods to first-order stiff initial value problems [24].” Suggested change: “More recently, applications of multi-derivatives block methods to first-order stiff initial value problems have emerged.”
4. “Therefore, this drawback could result to round-off errors in the global iterations if numerical methods are not sufficiently stable, that is, the numerical errors are not under check by the zero stability and consistency properties.” Suggested change: “Therefore, this drawback could result in round-off errors during global iterations if numerical methods are not sufficiently stable; that is, the numerical errors are not kept in check by zero stability and consistency properties.”
5. Further check for typos throughout the manuscript.

Further clarifications on the points below are suggested for the benefit of the audience's interest:

1. What particular reason did the authors choose the seventh order rather than the sixth or eighth?
2. What are the uneven collocation points and how are they constructed?
3. What are the main advantages of uneven collocation points compared to even ones? Why? Please provide referenced works to support your claim.
4. Explain the mechanism behind why the proposed method shows lower accuracy for the initial few points in problems 1 and 2, and becomes higher accuracy for the further points.

This is the end of the reviewer's comment.