Review of: "Analysis of Traub's method for cubic"

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Potential competing interests: No potential competing interests to declare.

Comments:

1. The paper provides a comprehensive analysis of Traub's method, extending the dynamical analysis of the Kurchatov scheme to a three-dimensional map. This expansion adds valuable insights into the stability and behavior of Traub's method for solving cubic polynomials.

2. The inclusion of a detailed algorithm (Traub's method) and the subsequent mathematical derivations contribute to the clarity and reproducibility of the research. The step-by-step description enhances the accessibility of the proposed methodology.

3. The study successfully connects Traub's method to the broader context of derivative-free one-step methods, providing a well-rounded overview of the method's efficiency compared to other numerical techniques. The efficiency index calculations and comparisons with existing methods offer a quantitative assessment.
4. While the paper offers a thorough analysis, the introduction could be improved by providing a clearer motivation for the choice of Traub's method over other existing methods. A more explicit discussion of the advantages or specific scenarios where Traub's method excels would enhance the paper's introductory section.

5. The presentation of the mathematical derivations and transformations, particularly in the section on the surface analysis, might be challenging for readers without a strong mathematical background. Consider providing more intuitive explanations or examples to aid in the understanding of these complex concepts.

Points for Improvement:

1. The conclusion section could benefit from a more concise summary of the key findings and their implications. Emphasize the practical significance of the stability results for Traub's method in the context of solving cubic polynomials.

2. Consider expanding the discussion on the limitations of Traub's method. Address potential scenarios or types of polynomials where the method may not perform optimally. Acknowledging the limitations enhances the paper's completeness and guides future research directions.

3. To enhance the visual appeal of the paper, provide clearer and labeled figures, especially for the plotted surfaces and any visual representations. This will aid in the interpretation of results for readers who may rely on visual understanding.