Review of: "A Novel Computational Approach for Solving Fully Implicit Singular Systems of Ordinary Differential Equations"

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Potential competing interests: No potential competing interests to declare.

This work introduces an innovative computational approach designed to address the solution of entirely implicit singular nonlinear systems of ordinary differential equations. The inherent challenge of such systems lies in their dual nature of being both fully implicit and singular simultaneously. Traditional software packages like Maple face limitations in solving these systems due to their fully implicit structure, and standard numerical methods such as Runge-Kutta are not applicable. The proposed method relies on applying the differential transform method (DTM) directly to these systems, leveraging a key property of Adomian polynomials. This novel approach results in a versatile and efficient algorithm that can be easily implemented using Maple, Mathematica, or Matlab. It is essential to highlight that our technique eliminates the need to transform the given implicit system into an explicit differential system. Additionally, the method enhances the DTM's capabilities for solving other fully implicit differential systems. To demonstrate the effectiveness of this approach, they provide four numerical examples that cannot be solved by software packages like Maple. The numerical results underscore the success of the method, delivering exact solutions in a convergent power series form for these examples.

The work would be more interesting if it included comparisons with other existing methods that can also address the proposed problems.