



Contribution ID: 35

Type: **not specified**

## A Trigonometrically-Fitted Four Step Method for solving Oscillatory Second Order Ordinary Differential Equations

*Monday 27 May 2024 15:45 (10 minutes)*

A continuous implicit trigonometrically-fitted four-step method (CITFFM) for solving oscillatory second order ordinary differential equations (ODEs) is developed in this paper. The CITFSM is generated by collocation and interpolation techniques through the use of a combination of power series and trigonometric function as approximate basis equation. For implementation purpose, an implicit discrete scheme is obtained from the CITSSM by choosing some numerical values to obtain constant coefficients for the method. The main predictors needed for the implementation of the implicit discrete scheme are designed to be of the same order with the method. Stability and other properties of method are ascertained, and accuracy and efficiency of the method are confirmed by solving linear and nonlinear initial value oscillatory problems of ODEs. The superiority of the method is shown by comparing the absolute errors of the method with some methods cited in the reviewed literature, and it was seen that the new method is more accurate.

**Author:** ADEGBORO, Oluwasemire (University of Medical Sciences, Ondo)

**Co-author:** Prof. KAYODE, Sunday (Federal University of Technology, Akure)

**Presenter:** ADEGBORO, Oluwasemire (University of Medical Sciences, Ondo)

**Session Classification:** Technical session 1

**Track Classification:** Mathematics: Applied mathematics