



Contribution ID: 102

Type: **not specified**

Solution of Nonlinear Brusselator Model by a Combined Sawi Transform and Homotopy Analysis Method

Tuesday, 28 May 2024 15:05 (10 minutes)

The Brusselator is a theoretical model for a type of autocatalytic reaction to analyze the behaviour of the chemical systems with non-linear oscillator. Fractional-order Brusselator system of equations (Reaction-Diffusion system) were solved using Sawi Homotopy Analysis Method (SHAM) which is a combination of Sawi transform and Homotopy analysis method. Obtained results were compared with the results in the literature and it was deduced that the mean absolute error (MAE) obtained by SHAM were smaller compared to the solution in the literature. The compiled findings showed the efficacy of the implemented technique and hence recommended for solving fractional-order nonlinear partial differential equations. (within the domains of applied sciences, engineering and technology).

Primary authors: SALAUDEEN, Kafilat Adebimpe (Emmanuel Alayande University of Education, oyo, Oyo State, Nigeria); FARAYOLA, Philip. I. (Dept. of Computing Science Education, Emmanuel Alayande University of Education, Oyo, Nigeria); ODERINU, Rasaan Adekola (LAUTECH); TIJANI, Waliu A. (Department of pure and Applied Mathematics, Ladoké Akintola University of Technology, Ogbomosho)

Presenter: SALAUDEEN, Kafilat Adebimpe (Emmanuel Alayande University of Education, oyo, Oyo State, Nigeria)

Session Classification: Technical session 3b

Track Classification: Mathematics: Applied mathematics