

Analytical solutions of nonlinear Schrodinger equations using multistep modified reduced differential transform method

ABSTRACT

This paper aims to propose and implement the Multistep Modified Reduced Differential Transform Method (MMRDTM) to find solution of Nonlinear Schrodinger Equations (NLSEs). Through the proposed technique, we replaced the nonlinear term in the NLSEs by the corresponding Adomian polynomials prior applying the multistep approach. Thus, we can obtain solutions for the NLSEs in easier way with less complexity. In addition, the solutions can be approximated more accurately over a longer time frame. We considered several NLSEs and illustrate the features of these solutions in the form of graphs in order to show the power and accuracy of the MMRDTM.

Keyword: Adomian polynomials; Multistep approach; Reduced differential transform method; Nonlinear Schrodinger equations