

Analytical solutions of non-linear Klein-Gordon equations using multistep modified reduced differential transform method

ABSTRACT

This paper explores the approximate analytical solution of non-linear Klein-Gordon equations (NKGE) by using multistep modified reduced differential transform method (MMRDTM). Through this proposed strategy, the non-linear term is substituted by associating Adomian polynomials obtained by utilization of a multistep approach. The NKGE solutions can be obtained with a reduced number of computed terms. In addition, the approximate solutions converge rapidly in a wide time region. Three examples are provided to illustrate the effectiveness of the proposed method to obtain solutions for the NKGE. Graphical results are shown to represent the behavior of the solution so as to demonstrate the validity and accuracy of the MMRDTM.

Keyword: Adomian polynomials; Multistep approach; NKGE reduced differential transform method