

# **A semi-analytical method for solving the nonlinear schrodinger equation with power-law nonlinearity**

## **ABSTRACT**

The purpose of this paper is to recommend and implement the Multistep Modified Reduced Differential Transform Method (MMRDTM) for solving Nonlinear Schrodinger Equations (NLSEs) with power-law nonlinearity. Prior to applying the multistep approach, we replaced the nonlinear term in the NLSEs with the corresponding Adomian polynomials using the proposed technique. As a result, we can obtain solutions for NLSEs with power-law nonlinearity in a simpler and less complex manner. Furthermore, the solutions can be approximated more precisely over a longer period. We considered several NLSEs with power-law nonlinearity and graphed the features of these solutions to demonstrate the power and accuracy of the MMRDTM.