On the numerical solution of sine-Gordon equation

Ozgur YILDIRIM [1], Meltem UZUN [2]

[1] *Department of Mathematics, Yildiz Technical University, Istanbul, Turkey*
E-mail: ozgury@yildiz.edu.tr
[2] *Department of Mathematics, Yildiz Technical University, Istanbul, Turkey*
E-mail: meltemu@yildiz.edu.tr

Abstract: In this work the approximate solution of well-known nonlinear eqaution is studied. Finite difference method and the fixed point iteration are used to obtain numerical solution of the nonlinear equation. Error analysis is presented using MATLAB implememtation.

Keywords: nonlinear boundary value problems, difference equations, numerical analysis

2010 Mathematics Subject Classification: 34B15, 39A10, 97N40

References

[1] Yildirim O., and Uzun M., "On the numerical solutions of high order stable difference schemes for the hyperbolic multipoint nonlocal boundary value problems", *Applied Mathematics and Computation*, Vol.254, pp. 210-218, 2015.
[2] Yildirim O., and Uzun M., "On third order stable difference scheme for hyperbolic multipoint nonlocal boundary value problem", *Discrete Dynamics in Nature and Society*, Vol.2015, pp. 16 pages, 2015.
[3] Ablowitz M.J., Herbst B.M., and Schober C.M., "On the numerical solution of the sine-Gordon equation .2. Performance of numerical schemes", *Journal of Computational Physics*, Vol.131, pp. 354-367, 1997.