

## SPECIAL ISSUE on Nonlinear Evolution Equations and Their Applications

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### DESCRIPTION

This special issue in [Demonstratio Mathematica](#) focuses on Artificial Intelligence Nonlinear Evolution Equations.

Nonlinear Evolution Equations (NEEs) play a significant role in the analysis of mathematical modeling and soliton theory. After the observation of soliton phenomena by John Scott Russell in 1834 and since the KdV equation was solved by Gardner et al. (1967) by inverse scattering method, finding exact solutions of nonlinear evolution equations (NLEEs) has turned out to be one of the most exciting and particularly active areas of research. These equations, which are primarily studied in mathematics and physics play an important role and character in various branches of science and technology, such as propagation of shallow-water waves, population statistics physics, fluid dynamics, condensed matter physics, computational physics, and geophysics. Nonlinear evolution equations also appear and are very important in many fields such as wave mechanics, dissipation mechanics, and dispersion in optics, reaction and convection equations. Over the past few decades, many compelling methodologies for extracting exact solutions of NEEs have been formulated.

However, it is more difficult to solve the NEEs but, various methods have been tried for solving NEEs, such as Hirota's bilinear operations, truncated Painleve expansion, inverse scattering transform, Jacobi-elliptic function expansion, homogenous balance method, sub ODE method, Rank analysis method, Extended and modified direct algebraic method, extended mapping method and Seadawy techniques to find solutions for some nonlinear partial differential equations and many other ansatzes comprising exponential and hyperbolic functions are accurately used for the analytic analysis of NEEs.

Recently, many researchers implemented the new proposed procedure by using mutable coefficients to find the solutions of NEEs and also proved that the introduced method could be easily applied to solve other nonlinear differential equations. The aim of this special issue is to collect excellent contributions related to nonlinear evolution equations and their solution with mutable coefficients in physics. Namely, the topic issue will focus on but not limited to:

- Local and global existence of solutions
- Blow-up phenomena
- Estimates of lifespan
- Fractional in time and space evolution equations
- Wave equation
- Schrödinger equation
- Conservation laws
- Numerical methods for solving nonlinear evolution equations

Authors are requested to submit their full revised papers complying the general scope of the journal. The submitted papers will undergo the standard peer-review process before they can be accepted. Notification of acceptance will be communicated as we progress with the review process.

## HOW TO SUBMIT

Before submission authors should carefully read the [Instruction for Authors](#), available on our [website](#) (Supplementary Materials).

Manuscripts can be written in TeX, LaTeX (strongly recommended) - the journal's [LATEX template](#). Please note that we do not accept papers in Plain TEX format. Text files can be also submitted as standard DOCUMENT (.DOC) which is acceptable if the submission in LATEX is not possible. For an initial submission, the authors are strongly advised to upload their entire manuscript, including tables and figures, as a single PDF file.

All submissions to the Special Issue must be made electronically via online submission system [Editorial Manager](#):

All manuscripts will undergo the standard peer-review process (single blind, at least two independent reviewers). When entering your submission via online submission system please choose the option “*Special Issue on Nonlinear Evolution Equations and Their Applications*”. Submission of a manuscript implies that the work described has not been published before and it is not under consideration for publication anywhere else.

The deadline for submissions is August 15, 2023, but individual papers will be reviewed and published online on an ongoing basis.

Contributors to the Special Issue will benefit from:

- critical peer-review
- no space constraints
- quick online publication upon completing the publishing process (continuous publication model)
- better visibility due to Open Access – free, unrestricted and permanent access to all the content
- liberal policies on copyrights (authors retain copyrights) and on self-archiving (no embargo periods)
- promotion of published papers to readers and citers
- long-term preservation – content archiving with Portico

We are looking forward to your submission!

In case of any questions please contact [Editorial Office](#) ([demonstratio.editorial@degruyter.com](mailto:demonstratio.editorial@degruyter.com))