Special Issue

Numerical Methods in Dynamical Systems

Message from the Guest Editors

The task of generalizing and studying classical and newer differential models appearing in the literature in recent years is always relevant. This requires the use and development of specialized numerical methods applicable to the study of specific nonlinear dynamical systems.

- Modified micro-electromechanical oscillators;
- Extended Duffing–van der Pol oscillators;
- Generalized anharmonic oscillators;
- Piecewise smooth oscillators;
- Perturbed Morse-type oscillators;
- Modified planar Kelvin–Stuart models;
- Multiple sine-Gordon models;
- Numerical solutions of the Boussinesq equation.

In several cases in the process of calculating the Melnikov functions, researchers find that the expressions of the Melnikov functions cannot be solved analytically because the homo/heteroclinic orbits are very complex. For this purpose, numerical algorithms are usually proposed and used in practice. Another interesting possibility is the use of high-order Melnikov polynomials to generate antenna factors. This requires the use of specific numerical algorithms from the fields of approximation theory and optimization theory.

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About the Journal

Message from the Editor-in-Chief

The journal *Mathematics* publishes high-quality, refereed papers that treat both pure and applied mathematics. The journal highlights articles devoted to the mathematical treatment of questions arising in physics, chemistry, biology, statistics, finance, computer science, engineering and sociology, particularly those that stress analytical/algebraic aspects and novel problems and their solutions. One of the missions of the journal is to serve mathematicians and scientists through the prompt publication of significant advances in any branch of science and technology, and to provide a forum for the discussion of new scientific developments.

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