Special Issue

Numerical Analysis and Modeling in Nonlinear Dynamics

Message from the Guest Editor

Nonlinear dynamics with multiscale variables are common phenomena in physics and chemistry. Applied mathematicians can understand these complicated nonlinear dynamics in physics and biochemical reactions using various methods, including numerical analysis and modelling. Any related methods, new ideas and practical algorithms are welcome to solve those nonlinear dynamics for fundamental scientific problems. Topics of interest include, but are not limited to:

- Multiscale modelling: microscopic stochastic models and fast–slow nonlinear dynamics;
- Continuum limit theory: thermodynamic limit, large population mean field limit, and convergence analysis for interacting particle systems;
- Numerical simulation for stochastic differential equations and macroscopic partial differential equations;
- Stochastic algorithms: ensembled statistical properties, rare event simulation, important sampling, Bayesian inference, variational methods for structure-preserving schemes, stochastic optimal control simulation and deep learning for dynamic systems.

Guest Editor

Dr. Yuan Gao

Department of Mathematics, Purdue University, West Lafayette, IN 46202, USA

Deadline for manuscript submissions

closed (31 July 2024)

Σ

Mathematics

an Open Access Journal by MDPI

**Impact Factor 2.2
CiteScore 4.6**

mdpi.com/journal/
mathematics

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.

Editor-in-Chief

Prof. Dr. Francisco Chiclana
School of Computer Science and Informatics, De Montfort University, The Gateway, Leicester LE1 9BH, UK

Author Benefits

High Visibility:
indexed within Scopus, SCIE (Web of Science), RePEc, and other databases.

Journal Rank:
JCR - Q1 (Mathematics) / CiteScore - Q1 (General Mathematics)

Rapid Publication:
manuscripts are peer-reviewed and a first decision is provided to authors approximately 18.4 days after submission; acceptance to publication is undertaken in 2.4 days (median values for papers published in this journal in the first half of 2025).