

Special Issue

Mathematical and Computational Models in Nonlinear Dynamics

Message from the Guest Editors

Nonlinear dynamics are central to science, describing behaviours across nature, technology, and society. From climate and biology to finance and engineering, many processes involve nonlinear interactions leading to complex and often unpredictable outcomes. Unlike linear models, nonlinear systems show bifurcations, chaos, and pattern formation, requiring rigorous mathematics with advanced computation to analyse, predict, and control. This Special Issue seeks to advance understanding of nonlinear systems through contributions in mathematical modelling and computational methods. We welcome studies on theory, modelling, algorithms, experimental validation, uncertainty quantification, and interdisciplinary applications. Topics include chaos, bifurcation analysis, data-driven modelling, machine learning for dynamical systems, and control of nonlinear processes. This Special Issue aims to foster collaboration among mathematicians, physicists, engineers, and computational scientists, showing how theory and computation together reveal insights into complex systems and support solutions to key challenges.

Guest Editors

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Deadline for manuscript submissions

31 July 2026



Mathematics

an Open Access Journal
by MDPI

Impact Factor 2.2
CiteScore 4.6



mdpi.com/si/255579

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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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