Special Issue

Nonlinear Dynamics in PDEs: Complexity and Chaos in Physical and Mathematical Sciences

Message from the Guest Editor

This Special Issue aims to present cutting-edge research exploring the behaviors that emerge in nonlinear dynamical systems. This issue welcomes theoretical works and works that connect theoretical and applied sciences, highlighting how nonlinear dynamics and chaos theory can be harnessed to solve complex problems in various fields. We invite contributions that delve into state-of-the-art topics such as bifurcation theory, synchronization phenomena, fractals, and multi-stability, as well as applications in engineering, biology, economics, and beyond. Although this Special Issue welcomes ubiquitous areas of complexity and chaos, a significant focus will be on the role of partial differential equations (PDEs) in modeling and understanding nonlinear phenomena. Topics of interest include, but are not limited to, soliton theory, wave propagation, biomathematics, turbulence, and pattern formation in reaction-diffusion systems. We also encourage studies on numerical methods for solving PDEs that exhibit chaotic behavior, as well as innovative analytical techniques that provide deeper insights into the stability and long-term behavior of these systems.

Guest Editor

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Deadline for manuscript submissions

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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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