Special Issue

Trends in Nonlinear Dynamic System Modeling

Message from the Guest Editor

We invite high-quality contributions to the Special Issue entitled "Trends in Nonlinear Dynamic System Modeling", to be published in the journal *Mathematics*. This Special Issue aims to highlight recent developments in data-driven methodologies, including machine learning and system identification techniques, applied to nonlinear and high-dimensional multiple-input multiple-output (MIMO) dynamic systems.   This Special Issue seeks innovative theoretical, computational, and application-oriented research that addresses challenges in modeling complex nonlinear systems using modern data-driven approaches. Topics include, but are not limited to, the following:

- Data-driven modeling of nonlinear MIMO systems;
- Physics-informed machine learning for dynamic systems;
- Sparse and interpretable model discovery (e.g., SINDy, Koopman analysis);
- System identification under uncertainty or noise;
- Hybrid modeling (first-principles + data);
- Black-box and gray-box neural models (e.g., RNNs, LSTMs, transformers);
- Online and adaptive learning in dynamic systems;
- Benchmarking and case studies in control, robotics, energy, and biomedical systems;
- Applications in complex, real-world MIMO systems.

Guest Editor

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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.

Editor-in-Chief

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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).

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