

Special Issue

Machine Learning Techniques for Enhancing Numerical Methods and Simulations

Message from the Guest Editors

Machine learning techniques, particularly those informed by physical laws, are increasingly being applied to enhance traditional numerical methods used to solve complex mathematical models, including partial differential equations (PDEs), optimization problems, and data-driven simulations. We particularly encourage submissions related to, but not limited to, the following topics: Physics-Informed Neural Networks (PINNs): The development and applications of PINNs for solving PDEs, inverse problems, and multi-physics systems. This includes novel architectures that incorporate physical laws directly into the learning process to improve solution accuracy and computational efficiency. Machine learning algorithms that integrate physics-based constraints to reduce computational costs while maintaining the fidelity of numerical simulations. Data-driven approaches for constructing surrogate models, accelerating the solution of complex physical problems, and improving the efficiency of high-dimensional numerical simulations.

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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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