

Special Issue

Advanced Mathematical Methods in Theoretical Physics

Message from the Guest Editor

We can announce the Special Issue “Advanced Mathematical Methods in Theoretical Physics,” which will be published in *Mathematics*. This Special Issue will showcase studies that develop or apply rigorous mathematical tools to tackle challenging questions in physics. We invite contributions that explain new or improved mathematical tools, and show how they can be used to solve problems in areas such as, but not limited to, quantum mechanics, optics, particle physics, gravitation, and condensed matter.

This Special Issue highlights techniques for understanding functions and operators (functional analysis), solving linear and nonlinear partial differential equations, applying algebraic methods and quantization, advancing quantum field theory, exploring modern geometry and topology, working with symmetry group representations, using the calculus of variations, employing approximation and asymptotic methods, studying probability and stochastic processes, analyzing dynamical systems, developing control theory, and other mathematical techniques utilized in physics. In addition to original research, review articles are welcome.

We look forward to receiving your contributions.

Guest Editor

Prof. Dr. Jeffery Secrest

Department of Physics and Astronomy, Georgia Southern University–Armstrong Campus, Savannah, GA 31419, USA

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Mathematics
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
mathematics@mdpi.com

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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

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

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Rapid Publication:

manuscripts are peer-reviewed and a first decision is provided to authors approximately 17.3 days after submission; acceptance to publication is undertaken in 2.8 days (median values for papers published in this journal in the second half of 2025).