

Special Issue

Partial Differential Equations with Applications: Analytical Methods

Message from the Guest Editors

Differential equations are essential to describe a real-world system as a mathematical model. Particularly, it is well-known that partial differential equations are used extensively in physics and engineering, where the problems involve functions of several variables, such as propagation of heat or sound, fluid flow, elasticity, etc. In the last few years, a wide number of methods has been developed to find analytical solutions of partial differential equations. Currently, symmetry methods are intensively applied to solve partial differential equations obtaining exact analytic solutions. Also, finding conservation laws or conserved quantities plays an important role in the solution of a problem. Furthermore, there has been considerable research in Painlevé-type equations since 1980. Specifically, the Painlevé tests are remarkable in their ability to predict whether an equation is integrable. The aim of this special issue is to show recent advances in the theory of partial differential equations and also applications to scientific problems.

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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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