



Differential Equation Models in Applied Mathematics: Theoretical and Numerical Challenges

Guest Editor:

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Message from the Guest Editor

This special issue focuses on modeling through differential equations (both ODE and PDE) and aims to highlight old and new challenges in the formulation, solution, understanding, and interpretation of differential models in different real world applications.

Classical formulations or more recent approaches based on compartmental models, dynamic systems on networks, multiscale problems, fractional differential equations, and Hamiltonian dynamic evolutions are all welcome. The covered technical topics range from analytical methods including phase plane analysis, linearization of non-linear systems, bifurcations, general theory of existence and approximation of non-linear solutions of DEs, to explicit, implicit, positive, non-standard, geometric numerical methods for initial and boundary valued DE problems. Classical research questions are faced and new challenges, such as the numerical treatment of uncertainty, will be addressed.





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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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