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NUMERICAL METHODS FOR DIFFERENTIAL EQUATIONS AND THEIR APPLICATIONS

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ABSTRACT

Numerical methods for differential equations play an important role in the modeling and simulation of complex phenomena in science and engineering. In recent decades, considerable progress has been made in both the mathematical analysis of numerical methods and their application to increasingly challenging problems. However, turning theoretical results into computational methods that are accurate, efficient, and reliable in practice remains a challenging task. This requires a good balance between mathematical rigour, algorithm development, and practical implementation.

This minisymposium brings together researchers working on the analysis, development, and application of numerical methods for differential equations. The contributions will focus on numerical methods that combine solid theoretical properties with good computational performance and reliability in practical simulations. Particular emphasis will be given to topics such as stability, convergence, and preservation of important mathematical structures.

Topics include, but are not limited to, numerical methods for ordinary and partial differential equations, efficient computational techniques, and numerical experiments for testing and comparing different methods. Applications range from physics, biology, chemistry, and engineering to fluid dynamics, materials science, medicine, and with particular attention to sustainability applications, highlighting the role of numerical methods in connecting mathematical models with practical simulations.