



*mathematics*



*Special Issue Reprint*

## Applied Analysis of Ordinary Differential Equations

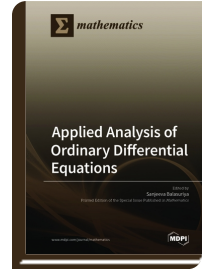
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One might say that ordinary differential equations (notably, in Isaac Newton’s analysis of the motion of celestial bodies) had a central role in the development of modern applied mathematics. This book is devoted to research articles which build upon this spirit: combining analysis with the applications of ordinary differential equations (ODEs). ODEs arise across a spectrum of applications in physics, engineering, geophysics, biology, chemistry, economics, etc., because the rules governing the time-variation of relevant fields is often naturally expressed in terms of relationships between rates of change. ODEs also emerge in stochastic models—for example, when considering the evolution of a probability density function—and in large networks of interconnected agents. The increasing ease of numerically simulating large systems of ODEs has resulted in a plethora of publications in this area; nevertheless, the difficulty of parametrizing models means that the computational results by themselves are sometimes questionable. Therefore, analysis cannot be ignored. This book comprises articles that possess both interesting applications and the mathematical analysis driven by such applications.



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