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**Recent Investigations on Differential and
Difference Equations and their Applications**

Guest Editors:

Prof. Dr. Martin BOHNER

Prof. Dr. Snezhana HRISTOVA



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Recent investigations on differential and difference equations and their applications

Preface

Differential and difference equations are very useful tools for adequate modelling of dynamic processes. It leads us to further studying various types of these equations and related initial and boundary value problems, to develop approximate methods for their solutions, as well as to their successful applications to real-world problems. This special issue invited papers focusing on recent and novel developments in the theory of any types of differential and difference equations and inclusions, especially on analytical and numerical results for fractional ordinary and partial differential equations.

We are pleased to present to the readers of the *Turkish Journal of Mathematics* this volume of twenty-two carefully selected works on recent investigations in differential and difference equations and their applications. These 22 papers are written by 47 eminent mathematicians based in nine countries (Algeria, Brazil, Bulgaria, China, Egypt, India, Portugal, Turkey, and USA). There are six papers in ordinary differential equations and their applications, including delay differential equations, integro-differential equations, inverse problems, and epidemic models. Eight papers discuss fractional equations and their applications, including fractional differential equations, fractional difference equations, fractional quantum difference equations, and fractional integral equations. Three papers consider settings within difference equations, one within quantum difference equations, and another one within dynamic equations on time scales. Two papers in partial differential equations and one paper in special functions complete the volume.

The editors would like to thank all authors for their contributions, all referees who have helped with their hard work to select only the best papers of highest quality, the production staff at the Scientific and Technological Research Council of Turkey (TÜBİTAK), and the Editor-in-Chief of the *Turkish Journal of Mathematics*, Professor Dr. Adnan Tercan (Ankara, Turkey). The editors hope that this collection of papers will attract interest of researchers working in related areas and will stimulate further progress in the study of differential equations, difference equations, and dynamic equations on time scales.

Guest Editors: *Martin BOHNER (Rolla) and Snezhana HRISTOVA (Plovdiv)*
January 25, 2022