Editorial

Analytical and Numerical Approaches for Complicated Nonlinear Equations

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Mathematical tools have been intensively used for the description of many natural phenomena. More often, these natural phenomena are first observed and converted into a mathematical formula usually called equations. One of the most obtained classes of equations is the nonlinear type. In order to predict the future behavior of the considered natural phenomena, we solve these equations either numerically or analytically. No wonder why many researchers in this field have devoted their attention to proposing numerical and analytical methods for these classes of equations. The aim of the special issue was to collect all the latest results and improvements done in this field. We have received 67 very good research papers; in order to keep the standard very high we have selected only 36.

This issue includes papers on dissimilar features, for example, new classes of boundary value conditions for fractional differential equations, singular differential equations, controllability of partial differential equations, bifurcation of positive solutions, impulsive problems, inverse problems, and numerical methods using, for example, recursively compressed inverse preconditioning, finite element method, or hybrid topological derivative-gradient-based methods and iterations methods.

Obviously, it is not conceivable to sufficiently characterize in this special issue all guidelines of up-to-date investigation on nonlinear problems; nonetheless we trust that it reproduces both theoretical research and important recent advances including current challenging problems, new ideas, and open problems.

Acknowledgment