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Solvability of Nonlinear Equations with Parameters: Branching, Regularization, Group Symmetry and Solutions Blow-Up

Guest Editor:

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Message from the Guest Editor

Dear Colleagues,

Starting with the seminal works of A.M. Lyapunov, A. Poincaré, and E. Schmidt, the branching theory of nonlinear parameter-dependent equations enabled various essential applications in natural sciences and engineering over the course of the last hundred years. V.I. Yudovich pioneered the application of symmetry methods in branching theory. A series of applications of the Lyapunov–Schmidt method, Conley index theory, and the central manifold methods in the conditions of group symmetry were reported in many seminal works during the last decades. Various critical processes in plasma physics, fluid dynamics, and thermo-dynamics are modelled using the branching theory of nonlinear differential-operator parameter-dependent equations. The objective of this Special Issue is to report on the cutting edge development of the advanced branching theory of nonlinear equations and their applications. The Special issue will bring together experts in qualitative theory of differential-operator equations, numerical analysts, and practitioners in the various applied fields of contemporary natural sciences.

Prof. Dr. Nikolai A. Sidorov
Guest Editor

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Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

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