Special Issue on
Recent Advances in Nonlinear Differential Equations: Modeling, Theory, and Applications

CALL FOR PAPERS

In the last couple of decades, the mathematical analysis of processes as modeled via nonlinear differential equations has risen manyfold. Such research has found rich applications in areas such as fluid systems, mechanical and multiagent systems, spatial ecology, infectious and vector-borne disease, cell motion and chemotaxis problems, and a variety of engineering problems. Social systems also continue to be investigated, for their far-reaching applications to modern society and its evolution. Topics in political science, language dynamics, and terrorism, for example, are very timely and applicable in today's day and age, and the potential for modeling in these areas via nonlinear differential equations is immense. Furthermore, traditional areas of interest such as fluid and thermoelastic systems have used and always will use nonlinear differential equations for both pure and applied investigations. A wide variety of modeling approaches are involved in building up suitable models. ODE, PDE, DDE, and SDE models, difference equation models, and nonautonomous models are examples of modeling approaches that are useful and capable of providing applicable strategies and making optimal polices.

The current special issue aims at creating a multidisciplinary forum of investigations on recent advances in nonlinear differential equations, as applied to problems in biology, social sciences, and traditional areas of continuum mechanics. Accepted papers will show new developments in these areas and will use nonlinear differential equations to bring about new mathematical as well as physical insights into some of the abovementioned topics, as well as others.

We will accept high quality articles containing original research results and review articles of exceptional merit, which might include analysis of systems of nonlinear differential equations for global existence of perhaps finite time blowup, modeling, and new numerical algorithms, as well as optimal control of these systems. The applications of these models can be a variety of interdisciplinary areas.

Potential topics include but are not limited to the following:

- Fluid systems
- Thermoelastic systems
- Analysis and synthesis of coupled mechanical systems
- Consensus, flocking, and swarming of multiagent systems
- Language dynamics
- Terrorism modeling and control
- Invasive species spread and control
- Synchronization of complex networks
- Chemotaxis mechanisms
- Disease modeling and control

Authors can submit their manuscripts through the Manuscript Tracking System at http://mts.hindawi.com/submit/journals/ijde/rand/.

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