

Special Issue on
**Open Challenges on the Stability of
Complex Systems: Insights of Nonlinear
Phenomena with or without Delay**

CALL FOR PAPERS

The stability analysis of complex systems provides the principles and methods useful for engineers, mathematicians, economists, and physicists among others to obtain a better understanding of the dynamics of the system. This allows us to understand the nature of the dynamics of the system and propose a new controller or improve control designs, optimizing or increasing performance. The scope of this analysis makes it the quintessential multidisciplinary field when including nonlinear phenomena with or without inherent or incidental delays. Here, the field of applied nonlinear systems has attracted scientists and engineers across many different disciplines to develop innovative ideas and methods to study complex behavior without delay. On the other hand, delays and nonlinearities appear frequently in physical and engineering systems. Typically, in most investigations, it is believed that the presence of delays in the dynamics of a system can cause poor performance in its response or even instability, and greatly increase the difficulty of stability analysis and control design. However, the delay when using an appropriate analysis it can also be employed to stabilize and improve the performance of the system. The stability analysis of both phenomena, nonlinearity and delays, continues presenting challenges of interest which contribute in the current and future investigations to most application domains including industry, energy, agriculture, sustainability, communications technologies, and autonomous systems. Moreover, present and future research challenges demand a holistic approach where systems and control play a key role.

The aim of the present issue is to provide to readers new tools and recent advances developed about complex nonlinear systems and complex systems with delay. Audience includes all researchers and graduate students interested in complex systems and control theory. We invite the authors to contribute original research articles that describe novel results for nonlinear or delay complex systems.

Potential topics include but are not limited to the following:

- ▶ Complexity and retarded control
- ▶ Nonlinear and delayed systems
- ▶ Mechatronics and automation
- ▶ Autonomous systems
- ▶ Underactuated systems
- ▶ Distributed networked control systems
- ▶ Industrial applications
- ▶ Stability of nonlinear dynamical systems
- ▶ New chaotic systems and synchronization of a pair of couple systems

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/complexity/ocsc/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

Lead Guest Editor

Baltazar Aguirre-Hernandez,
Universidad Autónoma Metropolitana,
Ciudad de México, Mexico
bahe@xanum.uam.mx

Guest Editors

Eric Campos-Canton, IPICyT, San Luis
Potosí, Mexico
eric.campos@ipicyt.edu.mx

Raúl Villafuerte-Segura, Autonomous
University of Hidalgo, Hidalgo, Mexico
villafuerte@uaeh.edu.mx

Carlos Vázquez-Aguilera, Umea
Universitet, Umea, Sweden
carlos.vazquez@umu.se

Carlos-Arturo Loredó-Villalobos, UAM,
Ciudad de México, Mexico
calv@xanum.uam.mx

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