SPECIAL ISSUE ON:
Theory of Positive Systems and Applications

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Positive systems are dynamical systems whose inputs, states, and outputs are intrinsically nonnegative at all times. They arise naturally since numerous practical systems often involve nonnegative system variables. Applications of such systems have been found in modelling compartmental networks, population evolution, gene regulation, Boolean networks, and chemical reactors. As a special class of dynamical systems, positive systems have many remarkable properties and broad applications, and have witnessed an unprecedented growth of interest over the past decade. Achievements on positive systems include new tools, methods, and ideas introduced to reveal peculiar properties, and their use as models for new subjects such as Boolean networks and multiagent systems. They are also employed as a tool for studying properties of general systems; robustness against uncertainties and delays in the state variables of a class of relatively broad-range systems can be verified in this manner. Positive systems are a special category of dynamical systems evolving on the positive orthant, which is a special cone. It has been shown that many dynamical systems defined on a proper cone exhibit similar properties to positive systems. Though significant achievements have been made, it is worth noting that there are various fundamental problems unexplored and this special issue focuses on the recent advances of positive systems and related applications. The topics of interest for this special issue include, but are not limited to:

- Positive delay systems
- Positive hybrid systems
- Dynamic analysis and control synthesis of positive distributed parameter systems
- Monotone dynamical systems theory
- Linear and nonlinear positive operators and their applications
- Biological systems with positive variables and positive controls
- Boolean networks
- Dimensioning problems for collaborative systems
- Matrix analysis and its applications in nonnegative dynamic systems
- Disease dynamics
- Dynamical systems on cone

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