

# Special Session on Advances in Fractional Calculus

## Theory and Applications



### 1 Organizers

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### 2 Abstract

In the last couple of decades, fractional calculus had played a very important role in various fields such as: physics, chemistry, mechanics, electricity, biology, economy and control theory. Moreover, it has been found that the dynamical behavior of many complex systems can be properly described by fractional order models. Such tool has been extensively applied in many fields which has seen an overwhelming growth in the last decade. The special session is intended to review new developments based on the fractional differentiation, both on theoretical and application aspects.

This special session is a place for researchers and practitioners sharing ideas on the theories, applications, numerical methods and simulations of fractional calculus and fractional differential equations. Our interested topics are enumerated in the below and submissions in the relevant fields are welcome.

The topics of interest include, but are not limited to:

- numerical and analytical solutions to fractional order systems;
- new implementation methods;
- improvements in fractional order derivatives approximation methods;
- time response analysis of fractional order systems;
- the analysis, modeling and control of phenomena in:
  - electrical engineering;
  - electromagnetism;
  - electrochemistry;
  - thermal engineering;
  - mechanics;
  - mechatronics;
  - automatic control;
  - biology;
  - biophysics;
  - physics, etc.

### 3 Deadlines

**Paper submission:** 31 October 2016

**Notification of acceptance:** 20 February 2017

**Final paper submission deadline:** 31 March 2017