

Proposal for a special issue in
Signal Processing
Advances in
Fractional Signals and Systems

SCOPE:

The Fractional Calculus is a generalisation of the traditional calculus that leads to similar concepts and tools, but with a much wider applicability. In the last two decades, fractional (or non integer) differentiation has played a very important role in various fields such as mechanics, electricity, chemistry, biology, economics and notably control theory and signal and image processing. In these last three fields, some important considerations such as modelling, curve fitting, filtering, pattern recognition, edge detection, identification, stability, controllability, observability, and robustness are now linked to long-range dependence phenomena.

Since the special issue of *Signal Processing*, published during 2006, a large amount of theoretical developments and application achievements were developed. The purpose of this special issue is to report the recent progresses in the domain of fractional signals and systems.

TENTATIVE SCHEDULE

Submission of Draft Papers: November 30, 2009

Paper Reviews Completed: February 15, 2010

Submission of Revised Paper for Review: March 15, 2010

Author Notification of Acceptance of Revised Paper: April 15, 2010

TOPICS (not exclusive)

Derivative definitions and computation

Linear shift-invariant systems

Linear scale-invariant systems

Nonlinear Systems

Fractional Filters

Fractional Order Modelling and Control in Biomedical Engineering

Fractional Variational Principles

Fractional Automatic Control

Fractional Electronic devices

Fractional Fourier Transform

Fractional Image Processing

Fractals and Fractional Brownian motion

Other applications of fractional models

GUEST EDITORS

- Prof. Manuel Ortigueira
Faculdade de Ciências e Tecnologia da
Universidade Nova de Lisboa, Portugal
mdo@fct.unl.pt
- Prof. Blas Vinagre
Universidad de Extremadura, Badajoz, Spain
bvinagre@unex.es
- Prof. José Tenreiro Machado
Instituto Superior de Engenharia do Porto,
Portugal
jtm@isep.ipp.pt
- Prof. Juan Trujillo
Universidad de La Laguna, Tenerife, Spain
jtrujill@ullmat.es