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Special Session on Dynamics and control of fractional order systems

organized by

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Call for Papers

Fractional order systems are dynamic systems the mathematical description of which, and therefore corresponding modelling, may comprise differential equations of non-integer order. Such fractional order systems already proved useful in distributed parameter systems, but also in various nonlinear and even anomalous behaviours in biology, material science, electrochemistry, and others. For instance, typical dynamic phenomena, calling for derivatives and integrals of fractional orders, can be of chaotic, creeping, viscoelastic, and memory containing type. At the same time, fractional order controllers and their integer order approximations may outperform standard integer order controllers. So far both, the modelling and the corresponding identification of physical plants and the control systems to be designed and implemented, experienced limited benefits from the fractional order system theories, although the associated mathematical body has already reached certain maturity. Also from an engineering perspective, and especially in the control engineering practice, fractional-order systems still are less attended. The special session aims to bring together researchers working with fractional order systems and provide scientific exchange of the most recent studies in their dynamics and control.

Topics of interest include:

- Modelling and identification of fractional order systems in mechatronics
- Design, synthesis and implementation of fractional order controllers
- Frequency and time domain analysis of fractional order dynamics
- Initial conditions, memory, and other properties of fractional order systems

IES Technical Committee Sponsoring the Special Session (if any):
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