

Modeling and Control of Miniaturized Mechatronic systems for Nanosciences and Nanorobotics

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In the last decades, miniaturization entered in all domains of science, technology and every-day life. Micro and nano objects are created and fabricated for a lot of purposes, due to the contributions of various domains like materials, physics, electronics, biology,... Miniaturized mechatronic systems are often used to visualize, to position, to manipulate or to assemble them. These systems suggest however several challenges for the control research community, as they exhibit a large panoply of complex phenomena to be dealt with, like high frequency resonances, nonlinearities, noises in. Modelling and control methodologies for these mechatronic systems are now well-established, but only few of them are benefiting from advanced methods (high order dynamical models, robust or nonlinear control).

The aim of this open invited track is to create the opportunity of bringing together control and micro-nano sciences communities around challenges and methodologies issued from different types of such systems.

Papers presenting feasibility results of modelling and control methods on simulated models inspired from nanosciences and nanorobotics or even real-time applications are well suited for this open invited track.

This invited track is within the TC4.2-Mechatronic Systems activities.

Keywords:

Nanosciences, advanced modeling and control, mechatronics, miniaturized systems, nanorobotics.