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## Vortragsankündigung

Seminar Regelungssysteme LV 0430L654

Donnerstag, 05. Juli 2012, 14:00 Uhr

Vortragsort: EN 223

**Prof. Dr.-Ing. Harald Aschemann**

Universität Rostock, Germany

Lehrstuhl für Mechatronik

“Norm-Optimal Iterative Learning Control for a Pneumatic Parallel Robot”

Iterative learning control is a popular method for accurate trajectory tracking of systems that repeat the same motion many times. This talk presents a norm-optimal iterative learning control scheme for a fast two-degree-of-freedom parallel robot driven by two pairs of pneumatic muscle actuators. The robot consists of a light-weight closed-chain structure with four moving links connected by revolute joints. The two base joints are active and driven by pairs of pneumatic muscles by means of toothed belt and pulley. The proposed control has a cascade structure. The internal pressure of each pneumatic muscle is controlled by a fast underlying control loop. Hence, the control design for the outer control loop can be simplified by considering these controlled muscle pressures as ideal control inputs. The angles of the active joints as well as the corresponding angular velocities represent the controlled variables of the outer loop. The implemented ILC algorithm takes advantage of actual state information as well as of data from previous trials. Experimental results from an implementation on a test rig show an excellent control performance.