Chair of
Automatic Control

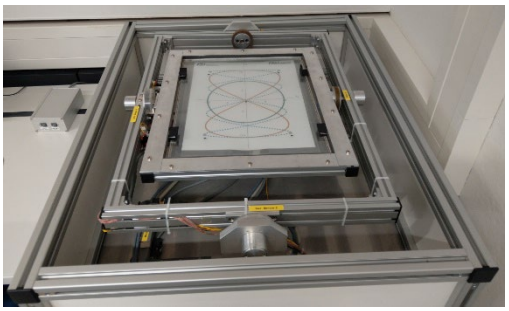
FAU

Research project / Student thesis

Revision of the experiment "Ball-on-Plate"

Motivation

The "Ball-on-Plate" experiment, in which a rolling ball is supposed to be guided along a predetermined path on a tiltable plate, serves as a demonstrator for the application of control methods on nonlinear systems. For this experiment, there is an experimental setup available at the chair which is intended to be modernized as part of this project.



Experimental setup "Ball-on-Plate"

Task description

The first part of this thesis/research project involves renewing some components of the setup in collaboration with the chair's own workshop. For example, the touchpad sensor for capturing the ball's position is to be replaced by a touch display, which can display changing desired trajectories for the ball and make them comprehensible to the observer. Additionally, the input of individual desired trajectories by a user via the touch display is conceivable. In the second part of the task, suitable software needs to be developed for the new functionalities and integrated into the existing MATLAB/Simulink software for controlling the experimental setup, which is executed using a dSPACE real-time system. Existing nonlinear control concepts must be adapted to the changes in the experimental setup.

Requirements

Skills in modeling and nonlinear control theory, experience with practical experimental setups, experience in programming (e.g. in Matlab), very good German language skills

Contact

Dr.-Ing. Andreas Michalka
andreas.michalka@fau.de