

# Model-Predictive Control for Multi-Axis Forming Machines



## Modellprädiktive Regelungen für mehrachsige Umformmaschinen

- Masterthesis**
- Bachelorthesis**
- ADP**
- ARP**
  
- Theoretisch**
- Experimentell**
- Konstruktiv**
- Numerisch**
  
- HiWi-Stelle**
- WiMi-Stelle**

Novel press designs such as the 3D servo press shown in Figure 1 have three degrees of freedom in the slide. Precise guidance of the ram pose presents control engineers with complex challenges, as the particularly elaborate gear kinematics (see Figure 2) require the application of concepts from robotics control.

Since the machine is overactuated, additional drive degrees of freedom can be used to satisfy specified constraints. Model predictive control approaches can be applied, for example determining an optimal trajectory of the drives that avoids singular configurations.

Within the scope of the thesis, model-predictive control approaches will first be investigated in simulation with Matlab-Simulink and then tested experimentally on the press.

More detailed information can be provided in a personal video conference.



Figure 1: 3D Servo Press in the test halls of the PtU

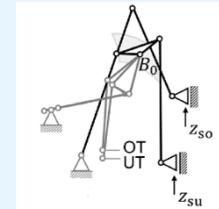


Figure 2: Schematic representation of the press gearbox

**Bearbeitung** From now on

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**Voraussetzungen** Matlab Simulink knowledge advantageous

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