



KOMMMA (Cooperative Multistage Multistable MicroActuator Systems) is a Priority Programme funded by the Deutsche Forschungsgemeinschaft (DFG) for a period of 2x3 years. The objectives of this interdisciplinary Priority Programme are to show up new methods and concepts to understand the complex coupling and synergy effects in coupled microactuator systems as well as to fabricate platforms for cooperative and/or multistage microactuator systems. The development of bi-/multistable mechanisms will be encouraged.



For more information visit:

spp-komma.de

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COoperative Multistage Multistable Micro Actuator Systems



KOMMMA

A DFG PRIORITY PROGRAMME

Research



The SPP brings together research groups of the different disciplines of microactuation, microsystems, material science, system simulation, control and systems engineering. The research programme of the SPP will focus on four core issues on different lengths and/or time scales:

Basic understanding of coupling effects and cross-sensitivities that arise from the spatially confined arrangement of diverse microactuators and corresponding functional materials

1

Identification and understanding of synergy effects resulting from promising combinations of microactuators, inherent sensing properties and multistable mechanisms

2

Design and evaluation of architectures of multifunctional actuator systems for microsystems applications

3

Development methods for microsystems applications including microtechnologies, integration and functionalization of actuator materials and supporting structures

4

Projects

Digital linear actuation systems

- ◆ **Spatial arrangement of diverse electrostatic effects, their interaction and control** (University Augsburg, Ruhr University Bochum)
- ◆ **Cooperative Actuator Systems for Nanomechanics and Nanophotonics** (CAU Kiel, Karlsruhe Institute of Technology)
- ◆ **Multistage Multistable Actuation System with scalable stroke, range and force capability based on cooperative electrostatic actuators (MUST ACT)** (Hochschule Furtwangen)
- ◆ **Coupling effects in a multi stage of bistable micropumps for high positive or low negative pressures** (Fraunhofer Institute EMFT)

2D Active Surfaces

- ◆ **DECMAS - Dielectric Elastomer Membranes for Cooperative Micro-Actuator/Sensor Concepts** (Saarland University, HTW Saar)
- ◆ **Push, Push, Push – Cooperative Actuators and Actuator Fields by Direct Writing Processes** (Freiburg University)
- ◆ **EASY-BRAILLE - Electrothermal Actuator System for bistable hybrid Braille area displays** (TU Darmstadt)
- ◆ **Switchable, bistable microactuator systems based on stimuli-responsive polymers** (CAU Kiel, Bremen University)

3D Actuation Systems

- ◆ **Kick and Catch - cooperative microactuators for freely moving platforms** (Augsburg University, Jade Hochschule, Ruhr University Bochum, Freiburg University)
- ◆ **Coupling Effects in Re-Programmable Micro-Matter** (IFW Dresden, Karlsruhe Institute of Technology, FAU Erlangen-Nürnberg)
- ◆ **A 2D array of cooperative hybrid levitation micro-actuators (2DAMA)** (Karlsruhe Institute of Technology)