

Why SMA

Introduction

- Smart materials
- Actuators
- Pros / cons
- Motivation

What type of SMA

SMA

- Material properties
- Fatigue life
- Shape
- Type / Alloys

Creating Artificial Muscles

SMA actuators

- Types of SMA actuators
- Control strategies / characterization

Predicting SME

Modelling

- FEM
- AM
- Bias SMA actuators (AM)

Redesign of Simple Bias-spring!
SMA Act

Thermal model

Oscillator

- Thermal model
- No control (Mech. Control)
- Bias flexure

Compliant bias element

Bias-flex gripper

- Compliant bias element
- Top. Opt.

Combine bias-element
& transducer

Bistable

- Flexure transducer
- SMA Antagonistic

flex. transducer
+ SMA - Ant.

Compliant SMA

Compliant SMA

- Top opt
- Strain retention
- Induction heating
- Multi-output

New kind of
SMA spring

Kinigami

- New spring
- Smart pivot