

Vorlesung

Mechanics of Smart Structures
(Mechanik Intelligenter Konstruktionen)

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Type: VO, 2SST, 3 ECTS

Exam: presentation of project including theoretical and programmed results or oral exam

Course content :

- fundamentals of linearized piezoelectricity :
 - fundamental equations of motion and electrostatics, constitutive equations and simplifications
 - initial and boundary value problem
 - variational formulation
- piezoelectric transducers :
 - d33, d31 and d15 effect
 - monolithic transducers
 - macro-fibre composites (MFC)
 - bimorph transducers
- finite element methods :
 - 3D finite elements
 - 1D/2D plate and beam elements
- dynamic control :
 - actuators and sensors
 - sensor design