



Structural Health Monitoring

Lecturer: Dr.-Ing. Christian Boller (Saarland University, Germany)

Course description:

Structural health monitoring (SHM) is a subject related to the integration of sensing and possibly also actuation devices to allow the loading and damaging conditions of a structure to be recorded, analysed, localised and predicted in a way that non-destructive testing (NDT) becomes an integral part of an engineering structure. SHM is not an additional NDT application, nor QNDT, a fatigue analysis, vibration analysis, signal processing, material science or any other single technological area but rather lateral integration of all those in terms of a structure's life cycle management. The lecture will therefore deal with structural integrity in general and the application of the damage tolerance design principle looking at sensing and possibly actuation devices adapted onto or integrated into a structure that will allow loads as well as resulting damages to be reliably monitored and the information retrieved to be used for prognostics of residual structural lives.

Syllabus of the lecture

1. What is SHM? A Motivation
2. Loads and Overloads
3. Fatigue and Fracture
4. Damage Tolerant Design and Implications
5. Modal Analysis
6. Guided Waves
7. Electromagnetic Principles
8. Optical Sensing
9. Applications & Potentials of SHM

TERMINY WYKŁADÓW			
Data	Dzień tygodnia	Godzina	Sala
2015-01-26	Pn	12.15-18.30	EiA E28
2015-01-27	Wt	12.15-18.00	EiA E27
2015-01-28	Śr	7.15-8.45	EiA E27