

Einladung zu praktischen Seminaren im Aachener Mechanik & Statik Kolloquium

19. Januar 2018 | 14:00 – 17:00 Uhr

RWTH Aachen University | Räume C4 und C5 im ZuseLab |

Prof.-Pirlet-Str. 12 | 52074 Aachen



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„Introduction to the dynamics of mechanical systems by the ANSYS software”

The lecture deals with the general problem of the linear dynamics of mechanical engineering designs. From the practical point of view it will be discussed the main types of dynamics analysis (modal, harmonic, spectrum, transient) available in modern commercial CAE software. Some theoretical background of FE formulations for these analyses is also discussed. Special focused will be given for the advances in modal analysis, such as pre-stress phenomena and the practical aspects of the modal stresses interpretation. Contact interactions within modal analysis will be discussed from the possible their practical usage. Restrictions to usage of symmetry conditions are analyzed in details for the problems of the vibration of engineering objects. Theoretical foundations of the conditions of cyclic symmetry and their practical application will be presented.

„Vibrations of the mechanical engineering elements and its dynamic strength”

The lecture presents the main aspects of the problem of dynamic strength of mechanical engineering elements in a sense of fatigue and wear failures. The main causes of the vibrations and types of dynamic behavior in the engineering applications are analyzed. An understanding of harmonic analysis will be discussed in practical examples as well as its theoretical foundation and methods for the solution. Some special attention will be paid for the problem of energy dissipation which exists during vibrations. The main linear and nonlinear models will be described here from the both physical and mathematical points of view. In addition the main ways of damping modeling in CAE software will be discussed for the different types of dynamic analysis.

The dynamic strength at cyclic load (i.e. during vibrations) will be discussed. The basic engineering models of the estimation of the fatigue damage accumulation will be presented together with the practical aspects of the design life-time forecast.

Prof. Dr.-Ing. M. Itskov, Lehr- und Forschungsgebiet für Kontinuumsmechanik, RWTH Aachen

Prof. Dr.-Ing. habil. S. Klinkel, Lehrstuhl für Baustatik und Baudynamik, RWTH Aachen

Prof. Dr.-Ing. B. Markert, Institut für Allgemeine Mechanik, RWTH Aachen

Prof. Dr.-Ing. S. Reese, Institut für Angewandte Mechanik, RWTH Aachen

Prof. K. Veroy-Grepl Ph.D., AICES, RWTH Aachen