**Institut für Hydromechanik (IfH)**
Prof. Dr.-Ing. Markus Uhlmann

**Institut für Mechanik (IFM)**
Prof. Dr.-Ing. Peter Betsch
Prof. Dr.-Ing. Thomas Seelig

**Institut für Strömungsmechanik (ISTM)**
Prof. Dr.-Ing. Bettina Frohnapfel

**Institut für Technische Mechanik (ITM)**
Prof. Dr.-Ing. Thomas Böhlke
Prof. Dr.-Ing. Alexander Fidlin
Prof. Dr.-Ing. Carsten Proppe
Prof. Dr.-Ing. Wolfgang Seemann

# Kolloquium für Mechanik

Referent: **Professor Anatoly Neishtadt**
Professor of Applied Mathematics, Loughborough University, U.K.

Date: Do., 12.04.2018
Time: 15:45 Uhr
Location: Geb. 10.81, Emil Mosonyi-Hörsaal (HS 62, R 153)

Title: **Averaging and passages through resonances**

## Abstract

Small perturbations imposed on an integrable nonlinear multifrequency oscillatory system cause a slow evolution. For an approximate description of the evolution, the classical averaging method prescribes to average the rate of evolution over all the phases of the unperturbed motion. This simple recipe does not always produce correct results because of resonances. Frequencies of the unperturbed system evolve in the process of the evolution, and resonances between them appear and disappear. The phenomenon of capture into resonance consists in the system starting to evolve in such a way as to preserve the resonance property once it has arisen. Averaging over all the phases does not describe dynamics in the case of capture into resonance.

In the talk, we will consider accuracy of the averaging method for systems which pass through resonant states in the process of the evolution, and describe dynamics in the case of captures into resonances.

Alle Interessenten sind herzlich eingeladen.

Prof. Dr.-Ing. Alexander Fidlin