



## Mechanik-Seminar

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Referent: **Assoc. Prof. Dr. Nguyen Phong Dien**  
Department of Applied Mechanics, Hanoi University of Technology  
Vietnam

Thema: **"Analysis of Non-Stationary Vibration Signals Using the Wavelet Transform"**

Datum: Donnerstag, 09.07.2009  
Uhrzeit: 15:45 Uhr  
Ort: Geb. 10.23, 1. OG, SR 1

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### Abstract:

Over the past 10 years, the Wavelet transform (WT) has become one of the emerging and fast-evolving mathematical and signal processing tool for its many distinct merits. The WT has dominant advantages in signal filtering and time-frequency characteristics, which make it possible to system identification and fault diagnostics. The measured signals of a machine often contain non-stationary components due to various kinds of factors, such as the change of the operating conditions and the faults from the machine itself. Continuous Wavelet transform of a vibration signal can construct a time-frequency distribution showing both the amplitude of any features in the signal versus the frequency and how this amplitude varies with time. Therefore, the WT is suitable to analyse non-stationary signals.

The presentation includes the following aspects:

- time-frequency analysis of signals,
- the Wavelet transform, algorithms and computer programs,
- an overview of applications of the Wavelet transform,
- modal damping identification using the wavelet-based demodulation method and fault diagnosis in gearboxes using wavelet amplitude maps as application examples.

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**Alle Interessenten sind herzlich eingeladen.**

Prof. Dr.-Ing. Carsten Proppe / Prof. Dr.-Ing. Wolfgang Seemann