

# IWR-Colloquium Winter Term 2016 / 2017

**November 9, 2016**

**16:15h**

**COS (Centre for Organismal Studies), Im Neuenheimer Feld 230**

**69120 Heidelberg**

**Lecture Hall (Room 00.005) / Ground Floor**

**Speaker:**

Prof. Barbara Wohlmuth • Technical University of Munich

**Title:**

“The role of numerical analysis in multi-physics applications ”

**Abstract:**

In this talk, we address several aspects of model and cost reduction techniques for the numerical simulation of PDEs. Firstly, we consider tearing and interconnection strategies in combination with interface models and reduced basis methods. These techniques are of special interest in the case of vibro-acoustic simulation and can largely reduce the number of degrees of freedom. Numerical results in case of orthotropic material laws are given for a violinbridge as well as a timber building.

Secondly, we discuss surrogate models which aim at a complexity reduction. Here we introduce locally mass conservative scheme in a local postprocessing step as well as adaptive control techniques for resilient multigrid solvers. In all cases, we provide the numerical analysis, algorithmic aspects and illustrative large scale results.

**Website Prof. Wohlmuth:**

[www.professoren.tum.de/en/wohlmuth-barbara](http://www.professoren.tum.de/en/wohlmuth-barbara)

**Website IWR-Colloquium:**

[www.iwr.uni-heidelberg.de/iwr-colloquium](http://www.iwr.uni-heidelberg.de/iwr-colloquium)