



## Oberseminar Analysis und Theoretische Physik

**Prof. Dr. Robert Martin  
(Universität Duisburg-Essen)**

### **Variational methods in nonlinear elasticity: some current results on generalized convexity and relaxation**

In the theory of nonlinear hyperelasticity, existence results for various boundary value problems are commonly based on direct methods of the calculus of variations. While physically reasonable material models require the corresponding energy functional to be non-convex, generalized convexity properties are, under suitable conditions, sufficient to ensure the existence of energy minimizers. Moreover, generalized convex envelopes can be employed to model complex materials exhibiting certain microstructures. Although the quasiconvex relaxation is particularly difficult to determine analytically, explicit representations are available for a growing number of subclasses of energy functions.

**Dienstag, 28.05.2024, 15:00 Uhr, Raum c311  
Hauptgebäude der Universität**

#### **Veranstalter:**

**Prof. Dr. Wolfram Bauer, Prof. Dr. Joachim Escher,  
Prof. Dr. Johannes Lankeit, Prof. Dr. Elmar Schrohe, Prof. Dr. Alexander  
Strohmaier, Prof. Dr. Christoph Walker, Dr. Alden Waters**