

SALZBURG MATHEMATICS COLLOQUIUM

Winter 2016/2017

Gerhard Starke (Duisburg-Essen)

„Stress approximation properties of finite element methods in solid mechanics“

January 12, 2017

Abstract:

Finite element approximations for variational problems modelling the elastic deformation of solid bodies usually work with the representation of the displacements in piecewise polynomial spaces with suitable continuity properties. However, it is the stress which is of primary interest in my applications since large stress components may lead to plastic flow or damage or influence the friction behavior for contact problems. Different approaches for the reconstruction of accurate stress approximations from displacements and, for incompressible materials, from displacements and pressure, will be presented and compared. This will also include extensions beyond linear elasticity on polygonally or polyhedrally bounded domains, i.e., hyperelastic material laws and curved boundaries are considered.

Part of this talk is based on joint work with Fleurianne Bertrand and Benjamin Müller.

Thursday, **15:00-15:45**
Hörsaal 414, 1. Stock