



IMACM-Talk am 15. Mai 2018

Prof. Dr.-Ing. Swantje Bargmann (Wuppertal):

**Modeling of damage behavior in microstructured solids with focus on metals and composites**

Abstract:

This talk deals with the computational modeling of damage in microstructured solids, in particular metals and composites. At a small enough scale, all natural and synthetic materials are heterogeneous. That is, they are either composed of domains of different materials, such as a composite, or the same material in different states, such as a polycrystal. The properties of a heterogeneous material depend on microstructural features. In this presentation, we discuss modeling related issues pertaining to the geometric arrangement of the constituents as well as on how to model various damage mechanisms. The models are all based on continuum mechanical theories and capture features such as tension-compression asymmetry, interface and/or interphase behavior, crack propagation, size-dependence, plasticity, matrix-inclusion interactions, anisotropy. As example, polycrystals, metallic glasses and composites are discussed. Comparison to experimental data is given.