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## Seminar über Fragen der Mechanik

zu folgendem Vortrag wird herzlich eingeladen

Montag, **15.02.2010, 14:15 Uhr**, Egerlandstr. 5, Raum 0.044

### Stress-induced phase transformations in shape-memory polycrystals

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Above the phase transformation temperature, shape-memory alloys show a super-elastic behaviour upon an applied stress. This is due to a phase transformation induced by the applied stress. It is interesting to know the onset of stress-induced transformation from a general perspective as well as with respect to applications.

In this talk I will present joint work with K. Bhattacharya [1] in which we determine and study the onset of phase transformation mathematically within the framework of energy minimization and homogenization theory.

We study a model case of scalar materials and consider specific examples of four variant materials with special textures. We characterize the onset of phase transformation. Moreover we give bounds on the stress-strain curve by using an approach of Milton and Serkov [2], which was developed to bound currents in nonlinear conduction composites.

- [1] Bhattacharya, K. & Schlömerkemper, A., Stress-induced phase transformations in shape-memory polycrystals, accepted for publication in *Arch. Rational Mech. Analysis*, available online
- [2] Milton, G. W. & Serkov, S. K., Bounding the current in nonlinear conduction composites. *J. Mech. Phys. Solids* **48**, 1295-1324 (2000)