Seminar über Fragen der Mechanik

zu folgendem Vortrag wird herzlich eingeladen

Dienstag, 12.06.2012, 16:00 Uhr, Egerlandstr. 5, Raum 0.044

Nonlinear magneto-elasticity: some boundary value problems

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Polymers undergoing significant changes in their elastic properties on the application of electric or magnetic fields have potential uses in a variety of engineering applications as 'smart materials'. Recent research in synthetic development of such materials has renewed an interest in understanding the coupling of electromagnetic and mechanical phenomena in continuous media. In this talk, we focus on materials that generate a nonlinear mechanical response to a magnetic field from a mathematical point of view.

After discussing the underlying theory and basic equations, we consider some boundary value problems using some simple strain energy functions. The first problem is concerned with different kinds of waves on the surface of a finitely deformed half-space; while the second is concerned with nonlinear deformations and axisymmetric vibrations of a hollow cylindrical tube.