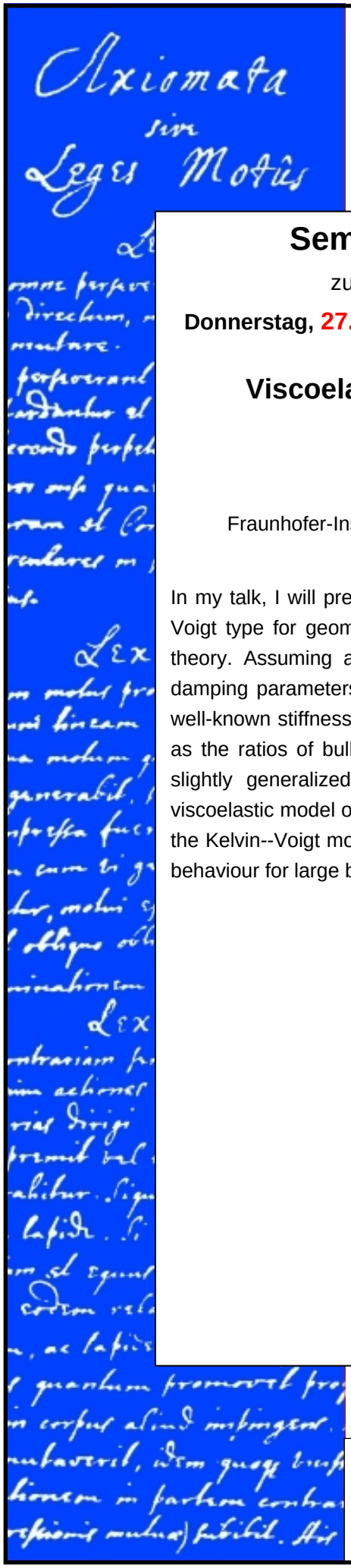

Friedrich-Alexander-Universität Erlangen-Nürnberg

Seminar über Fragen der Mechanik

zu folgendem Vortrag wird herzlich eingeladen

Donnerstag, 27.09.2012, 11:00 Uhr, Konrad-Zuse-Str. 3-5, Raum 2.030

Viscoelastic Cosserat rods of Kelvin-Voigt and generalized Maxwell type

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In my talk, I will present the derivation of a simple viscous damping model of Kelvin-Voigt type for geometrically exact Cosserat rods from three--dimensional continuum theory. Assuming a homogeneous and isotropic material, explicit formulas for the damping parameters of the model are obtained which express these in terms of the well-known stiffness parameters of the rod and the retardation time constants defined as the ratios of bulk and shear viscosities to the respective elastic moduli. Using a slightly generalized version of the same approach, one may likewise derive a viscoelastic model of generalized Maxwell type. I briefly discuss the range of validity of the Kelvin--Voigt model relative to the generalized Maxwell approach, and illustrate its behaviour for large bending deformations with a numerical example.

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