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Seminar über Fragen der Mechanik

zu folgendem Vortrag wird herzlich eingeladen

Donnerstag, **28.04.2016, 10:00 Uhr**, Egerlandstr. 5, Raum 0.044

Mechanics of Fluid-Saturated Hyper-Elastic Soft Tissue

A.P.S. Selvadurai

William Scott Professor and James McGill Professor, Department of Civil Engineering and Applied Mechanics, McGill University, Montréal, Canada

Fluid-saturated materials are encountered in several areas of engineering and biological applications. Geologic media saturated with water, oil and gas and biological materials such as bone saturated with synovial fluid, soft tissues containing blood and plasma and synthetic materials impregnated with energy absorbing fluids are some examples. In many instances such materials can be examined quite successfully by appeal to classical theories of poroelasticity where the skeletal deformations can be modelled as linear elastic. In the case of soft biological tissues and even highly compressible organic geological materials, the porous skeleton can experience large strains and, unlike rubberlike materials, the fluid plays an important role in maintaining the large strain capability of the material. In some instances, the removal of the fluid can render the geological or biological material void of any hyperelastic effects. The flow of fluid within the porous skeleton is defined by Darcy's law for an isotropic material, which is formulated in terms of the relative velocity between the pore fluid and the porous skeleton. It is assumed that the form of Darcy's law remains unchanged during the large strain behaviour. This approach basically extends Biot's theory of classical poroelasticity to include finite deformations. The developments are used to examine the poro-hyperelastic behaviour of certain one-dimensional problems.

Prof. Dr.-Ing. P. Steinmann
Prof. Dr.-Ing. K. Willner

Lehrstuhl für Technische Mechanik
Egerlandstraße 5, 91058 Erlangen

Prof. Dr.-Ing. S. Leyendecker

Lehrstuhl für Technische Dynamik
Haberstraße 1, 91058 Erlangen