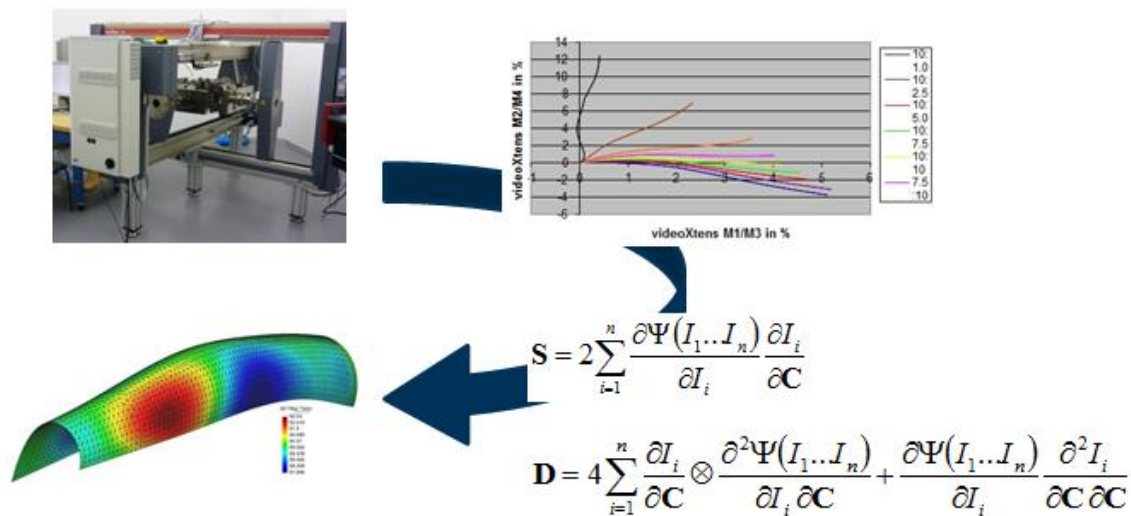


Postprocessor for uniaxial and biaxial tension tests

Textile materials are characterized due a complex structure at a mesoscopic scale. Basically it can be described as a combination of friction between the yarns, the elasticity of the yarns and rigid body rotations of the micro-structure. This leads to a highly nonlinear material behaviour at a macroscopic level. In order to capture this behaviour in structural analyses a constitutive model based on the concept of response surface methodology (so-called meta-models) is introduced. Hence, uniaxial and biaxial test data will be used for defining the nonlinear material parameter for the constitutive model.



The aim of this project is the development of a software tool for post processing material test data and establishing the response surfaces. The post-processor shall possess the following features:

- Manage, read and store test data by means of a graphical user interface (GUI)
- Compute characteristic quantities (structural invariants, specific work, etc.)
- Establish and visualize response surfaces
- Create input deck for further FE-simulations

The software tool should be platform independent (Java would be preferred).

Skills:

Object oriented programming, basic continuum mechanics, interest in designing a GUI

Supervisor

Armin Widhammer, Chair of Structural Analysis, armin.widhammer@tum.de

References

Wendt, E. and Krzywinski, S.: "Determination of specific values by uniaxial and biaxial tensile tests to describe the deformation behavior of technical textiles as a basis for simulation tools", 2011