Associate Professorship of Computational Mechanics and Professorship of Wood Technology
Deparment of Civil, Geo and Environmental Engineering
Technical University of Munich

Advanced modeling of biological materials

Setting:

Biological materials such as wood and soft tissues exhibit complex material behaviour like anisotropy, strain-rate, moisture and temperature dependence. Although basic models for biological materials are available in commercial FE-codes, they are only capable to cover some aspects of the complex material behaviour. User-defined models are needed to extend the basic models for more complex loading scenarios.

Your Tasks:

Extend an existing material model for biological tissues to cover specific material properties as temperature or strain-rate dependency and verify the model in simple standard load cases.
Simulations will be performed in LS-DYNA or ABAQUS. User-defined material modeling will be in FORTRAN. The user should have basic knowledge on FE modelling and an interest in material models.

Project Characteristics

Modeling: ★ ★ ★ ★ ★
Mathematics: ★ ★ ★ ☆ ☆
Programming: ★ ★ ★ ☆ ☆
Science: ★ ★ ★ ★ ☆

Ani Khaloian (TUM) - sarnaghi@hfm.tum.de | Felicitas Lanzl (TUM) – felicitas.lanzl@mytum.de
Michael Richter (TUM) – Michael.richter@matfem.de | Koushyar Komeilizadeh (TUM) – k.komeilizadeh@tum.de