



Michael Neunteufel

Institute for Analysis and
Scientific Computing, TU Wien

„Nonlinear Shells – avoiding locking by the Hellan-Herrmann- Johnson method and Regge interpolation“

Finding appropriate discretizations for nonlinear shells is still a challenging problem. For Kirchhoff plates the Hellan--Herrmann--Johnson method introduces a moment tensor for computing the fourth order equation as a mixed method.

In this talk we present a generalization of these methods to nonlinear shells with large strains and rotations. We assume the Kirchhoff--Love hypothesis and focus on the bending energy. Therefore, we introduce the moment tensor in the finite element space $H(\text{divdiv})$. With these elements, also non-smooth surfaces with kinks can be handled directly.

To overcome membrane locking for triangular meshes an interpolation operator into the so-called Regge space is inserted in the membrane energy term, weakening the number of implicitly given constraints.

Finally, the method, which is implemented in the finite element library Netgen/NGSolve (www.ngsolve.org), is demonstrated by means of several numerical examples.

Donnerstag, 16. Januar 2020, ca. 9:45 Uhr

Multimedia-Hörsaal

am Institut für Baustatik und Baudynamik

Pfaffenwaldring 7, Raum 1.155

Vortrags- ankündigung