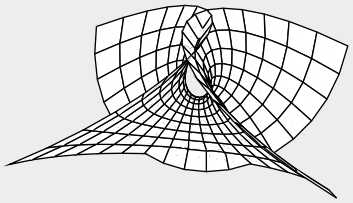

Einladung zum Oberseminar Mathematik in den Naturwissenschaften

Julius-Maximilians-Universität Würzburg
Lehrstuhl für Mathematik in den Naturwissenschaften

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Shape sensitivity of a stationary 2D fluid-structure interaction problem

This presentation deals with a work carried out in collaboration with Ilaria Lucardesi and Jean-François Scheid on the study of the shape differentiability – with respect to a reference elastic domain – of a general functional depending on the solution of an FSI problem.

At first, the considered FSI model is introduced, namely the interaction of an incompressible elastic material and a viscous incompressible fluid in a 2D steady state. Well-posedness is shown for this model.

Next, the speed method is described for defining the shape derivative of an abstract shape functional. The shape differentiability of the FSI solution is exposed. From this, the shape derivative is computed. This derivative involves the material derivative of the solution of the FSI problem. The adjoint method is finally used to obtain a simplified expression of the shape derivative, which is thus independent of the material derivative, by showing the existence of suitable adjoint states.

Ort: Mathmatik Ost, 40.03.003/Zoom	Zeit: Donnerstag, 27.04.2023 um 11:00 Uhr

You are cordially invited to this lecture. Request the Zoom link from anja.schloemerkemper@mathematik.uni-wuerzburg.de

gez. Anja Schlömerkemper