Institut für
Angewandte Mathematik

Leibniz
Universität
Hannover

Oberseminar
Analysis und Theoretische Physik

Prof. Dr. Dominic Breit
(TU Clausthal)

Analysis of fluid-structure interactions: linear elastic shells

We study the interaction of an incompressible fluid with an elastic structure yielding the moving boundary of the physical domain. The displacement of the structure is described by a linear viscoelastic beam equation. Previously, only the ideal case of a flat reference geometry was considered such that the structure can only move in vertical direction. We allow for a general geometric set-up, where the structure can even occupy the complete boundary.

In the two-dimensional case our main result is the existence of a unique global strong solution. In the three-dimensional case we prove local existence of strong solutions, weak-strong uniqueness as well as a counterpart of the classical Ladyzhenskaya-Prodi-Serrin condition yielding conditional regularity and uniqueness of a solution.

Dienstag, 17.06.2025, 15:00 Uhr, Raum c311
Hauptgebäude der Universität

Veranstalter: Prof. Dr. Wolfram Bauer, Prof. Dr. Joachim Escher, Prof. Dr. Johannes Lankeit, Prof. Dr. Elmar Schrohe, Prof. Dr. Alexander Strohmaier, Prof. Dr. Christoph Walker, Dr. Alden Waters