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Analysis of Moving Boundary Fluid-Structure Interaction Problems Arising in Hemodynamics

Fluid-structure interaction (FSI) problems describe the dynamics of multi-physics systems that involve fluid and solid components. These are everyday phenomena in nature, and arise in various applications ranging from biomedicine to engineering. Mathematically, FSI problems are typically non-linear systems of partial differential equations (PDEs) of mixed hyperbolic-parabolic type, defined on time-changing domains.

In this lecture we will study an FSI problem describing blood flow through a compliant vessel. First we will explain main modeling assumptions, illustrate the main challenges arising in the PDE analysis of such FSI problems, and prove the existence of a weak solution of Leray-Hopf type. The proof will use a partitioned numerical scheme called "kinematically coupled scheme" for the construction of the approximate solutions. The special emphasis will be on the interplay of numerics and the existence proof. Finally, some extension of these ideas to different FSI problems will be discussed.

Ort: Zoom video conference   Zeit: Donnerstag, 20.01.2022 um 14:30 Uhr

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

gez. Anja Schlömerkemper