



## Einladung zum Oberseminar Mathematik in den Naturwissenschaften

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

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### **A variational approach to fluid structure interaction**

This is a joint work with Malte Kampschulte (Charles University) and Sebastian Schwarzacher (University of Uppsala & Charles University).

In this talk we will consider the interaction of a Stokes/Navier-Stokes flow with a viscoelastic body. The elastic body is allowed to undergo large deformations (but no self-collisions). In order to handle this situation correctly, we devise a variational approximation scheme in the spirit of DeGiorgi to the combined problem. Moreover, by using a two-scale scheme, we also extend this approach to the hyperbolic regime including inertia of the solid body. These variational approaches allow us to prove proper energetic estimates while also controlling the geometric restrictions posed on the solid body and, eventually, to establish existence of weak solutions.

### **References**

- [1] Benešová, Barbora, Malte Kampschulte, and Sebastian Schwarzacher, *A variational approach to hyperbolic evolutions and fluid-structure interactions.*, arXiv:2008.04796 (2020).

Ort: Zoom video conference

Zeit: Dienstag, 05.07.2022 um 09:00 Uhr

**You are cordially invited to this lecture.**

**Request the Zoom link from [anja.schloemerkemper@mathematik.uni-wuerzburg.de](mailto:anja.schloemerkemper@mathematik.uni-wuerzburg.de)**

gez. Anja Schlömerkemper