



Oberseminar Mathematische Strömungsmechanik

Institut für Mathematik der Julius-Maximilians-Universität Würzburg

Hyperbolic equations - structure preserving methods & other topics

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A Numerical Approach for a Coupled System Describing Sedimentation in Suspensions of Rod-Like Particles

Abstract:

We study concepts for an efficient numerical approximation of the sedimentation process in suspensions of rod-like particles. The starting point of our considerations is a coupled system of partial differential equations consisting of a kinetic equation for the rod orientation which is coupled to a macroscopic flow equation. It describes the motion of a suspension of rigid rod-like particles under the influence of gravity.

Since the coupled system is high dimensional (five spatial dimensions + time) we are interested in a derivation of simpler systems which describe the dynamics observed in experimental studies without resolving all the details of the full multi-scale model. In order to do this we derive a hierarchy of moment equations and show that the system of moment equations can be interpreted as a numerical approximation of the full model.

This is joint work with Athanasios E. Tzavaras (KAUST) and Sina Dahm (HHU).

via Zoom video conference (request the Zoom link from klingen@mathematik.uni-wuerzburg.de)

Friday, May. 21, 2021 at 3 pm CET

Zu diesem Vortrag sind Sie herzlich eingeladen.

gez. Christian Klingenberg