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Einladung zum Vortrag

von Herrn Dr. Jan Heiland (Max-Planck-Institut, Magdeburg) zum Thema

Robust control for compensation of linearization and discretization errors in stabilization of incompressible flows

am Mittwoch, 03.07.2019, um 13:00 Uhr, in Raum (IM) SR 010

Abstract

We consider the stabilization of incompressible fluid flow using linearized and spatially discretized models. In order to potentially work in applications, the designed controller must stabilize the discrete model with a robustness margin that covers linearization, discretization, and modeling errors.

We discuss that a linearization error in the infinite-dimensional model amounts to a coprime factor uncertainty and show that H∞-robust controllers can compensate this in the discrete approximation.

In numerical experiments, we quantify the robustness margins and show that the H∞-robust controller, unlike the LQG-controller, is capable of stabilizing nonlinear incompressible Navier-Stokes equations with an inexact linearization.