ETH zürich

Institute of Fluid Dynamics
Institute of Energy and Process Engineering

Kolloquium Thermo- und Fluiddynamik

Reduced Modeling of Non-Linearizable Dynamics from Equations and Data

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The accurate simulation and qualitative analysis of large nonlinear systems of solid and fluid mechanics continues to be a major challenge. To this end, projection-based model reduction techniques are broadly used but they rely on ad hoc mode selection and produce a priori unknown errors. A recent alternative is reduction to spectral submanifolds (SSM), which are low-dimensional attractors acting as nonlinear continuations of the spectral subspaces of the linearized system. Two open-source numerical packages, SSMTool and SSMLearn, are now available to perform such computations for nonlinear evolution equations and data. We will illustrate these results on non-linearizable fluid flow simulations and experimental data sets.

Date: Wednesday, 17 November 2021
Time: 16:15h
Place: ETH Zurich, ML H 44
Host: Prof. Filippo Coletti, IFD

Mandatory COVID certificate*

Further information: https://ifd.ethz.ch/events/ktf.html

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