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BAYREUTH, DEN 27.06.2025

VORTRAGSANKÜNDIGUNG

Im Rahmen unseres gemeinsamen Oberseminars

„Numerische Mathematik, Optimierung und Dynamische Systeme“

spricht

Herr Patrick Bachmann

“Lehrstuhl für Angewandte Mathematik, Universität Bayreuth"

am Donnerstag, 03.07.2025 um 15:00 Uhr
im Raum S 137, Gebäude NW III

über das Thema

"Input-to-output stability for infinite dimensional systems**”**

Abstract:
Input-to-output stability (IOS) is an essential characteristic of control systems with outputs as it combines the uniform global asymptotic stability of the output dynamics with its robustness with respect to external inputs.

We provide a superposition theorem for IOS of a broad class of nonlinear infinite-dimensional systems with outputs. On the path to achieve this result, we introduce several novel stability and attractivity concepts for infinite dimensional systems with outputs, several of which are new already for systems with full-state output. Moreover, we provide a superposition theorem for systems which satisfy both the output-Lagrange stability property and IOS, and characterize ISS in terms of IOS and input/output-to-state stability.

Furthermore, we establish a necessary and sufficient Lyapunov criterion for IOS in terms of the novel definition of vector IOS Lyapunov functions.

This talk is based on joint work with Sergey Dashkovskiy (Uni Würzburg) and Andrii Mironchenko (Uni Bayreuth).

Biography:
Patrick Bachmann received his Bachelor's degree in Business Mathematics at the University of Mannheim, Germany, in 2015 and his Master's degree in Mathematics at the Karlsruhe Institute of Technology, Germany, in 2018. He worked as a research assistant at the Technical University of Kaiserslautern, Germany, and the University of Würzburg, Germany. Currently, he is working at the University of Bayreuth, Germany, while pursuing his PhD degree in Mathematics under supervision of Sergey Dashkovskiy and Andrii Mironchenko. His research interests include impulsive systems, stability and control theory, Lyapunov functions, and infinite-dimensional systems..

gez. Lars Grüne