

BAYREUTH, DEN 02. APRIL 2015

Vortragsankündigung

Im Rahmen unseres gemeinsamen Oberseminars

Numerische Mathematik, Optimierung und Dynamische Systeme

spricht

Herr Dr. Michael Schönlein
Universität Würzburg

am **Montag, 20. April 2015, 16 Uhr c. t.** über das Thema

“ Controllability of Ensembles of Linear Dynamical Systems ”

Abstract:

We investigate the task of controlling ensembles of initial and terminal state vectors of parameter-dependent linear systems by applying parameter-independent open loop controls. From a functional analytic point of view, the problem of ensemble controllability is equivalent to approximate controllability of infinite-dimensional systems defined on Banach or Hilbert spaces. Standard characterizations of approximate controllability in Hilbert spaces are, except for very special cases, not easily applicable for ensemble control. In this talk we present a new function theory approach to uniform ensemble controllability. Using classical approximation theoretic results, such as the Stone-Weierstrass Theorem and Mergelyan's Theorem, we present necessary, as well as sufficient conditions for ensemble controllability. It turns out that, up to a technical condition, the ensemble control problem for continuous-time and discrete-time systems are equivalent. For real analytic families of linear systems it is shown that ensemble controllability holds only for systems with at most two independent parameters. Our approach is based on information of the spectrum of the system matrices. An open problem is to find relaxed necessary and sufficient conditions using the concept of pseudospectra.

Der Vortrag findet im S 82, Gebäude NW II statt.

gez. Lars Grüne