

Einladung zum  
**Würzburger  
Mathematischen Kolloquium**

Julius-Maximilians-Universität Würzburg • Fakultät für Mathematik und Informatik

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**Stabilisation of port-Hamiltonian  
Systems**

Mittwoch, 16. Mai 2018 • 16:15 Uhr

Raum SE 40, Mathematik Ost, Emil-Fischer-Str. 40, Campus Hubland-Nord

**Inhaltsangabe:**

The class of port-Hamiltonian systems includes many of the well-known (linear) partial differential equations on a 1D spatial domain, such as the vibrating string and the transmission line. We discuss the stabilization of this class of systems using a nonlinear dynamic boundary control. These nonlinearities are usually associated to large deformations or the use of smart materials such as piezo actuators and memory shape alloys. Including them in the controller model results in passive dynamic controllers with non-quadratic potential energy function and/or nonlinear damping forces.

First it is shown that under very natural assumptions the solutions of the partial differential equation with the nonlinear dynamic boundary conditions exist globally. Secondly, when energy dissipation is present in the controller, then it globally asymptotically stabilizes the partial differential equation.



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Zu diesem Vortrag laden wir Sie herzlich ein.  
Im Anschluss an den Vortrag stehen Tee und Kaffee im Foyer vor dem SE 40 bereit.



Die Dozentinnen und Dozenten der Mathematik