Contribution ID: **14**   Type: **not specified**

Damping Optimization of Parameter-Dependent Mechanical Systems using the Reduced Basis Method

Dampers are used for instance in structure engineering to stabilize constructions, e.g. buildings, bridges or dams. The dampers are externally included to avoid strong movements caused by external forces with frequencies close to the eigenfrequencies of the structure. We want to optimize these dampers in order to stabilize the constructions against external forces.

Our aim is to optimize parameter-dependent dampers that are incorporated into mechanical mass-spring-damper systems. Therefore, we evaluate the input response of the system, which can be computed by solving parameter-dependent Lyapunov equations. To accelerate the optimization process we want to solve the Lyapunov equations by applying the reduced basis method. There we solve the Lyapunov equations on a reduced space that approximates the solution space.
This space is spanned by the low-rank factors of the solutions of the Lyapunov equations, for some test parameters. If the numerical rank of the solutions is large, we face the problem of large reduced spaces.

Primary author: PRZYBILLA, Jennifer (Max Planck Institute for Dynamics of Complex Technical Systems)

Presenter: PRZYBILLA, Jennifer (Max Planck Institute for Dynamics of Complex Technical Systems)

Track Classification: Talks