E i n l a d u n g

In der Reihe „Chemnitzer Mathematisches Colloquium" der Fakultät für Mathematik der TU Chemnitz spricht

Herr Prof. Dr. Volker Mehrmann (TU Berlin)

über das Thema

Mathematical Modelling and Numerical Methods for Digital Twins.

Der Vortrag findet am

Donnerstag, dem 28. November 2024, um 16:00 Uhr, im Raum B202, Reichenhainer Straße 70

statt.

Ich möchte Sie hiermit recht herzlich zu dieser Veranstaltung einladen. Das Kolloquium wird von Herrn Prof. Dr. Martin Stoll geleitet.

Abstract:
Digital twins are becoming a new paragigm in the design and operation of technical systems or processes. To build the virtaal part of the twin it is necessary to have very flexible open mathematical models of different modeling accuracies as well as space-time-model adaptive numerical methods. A key feature of digital twins are the data ports that connect to the real twin and that will steer the simulation and control methods in the virtual twin. A system theoretic modeling paradigm to achieve these goals is that of energy based modeling via port-Hamiltonian systems. The model class allows to build open hierarchical models in a strongly modular fashion, it is invariant under Galerkin projection for space and time discretization. We introduce digital twins for electrical generators, gas transport as well as district heating systems and show how to use the twin in the simulation and optimization framework.

Prof. Dr. Daniel Potts
Dekan

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