Prof. Dr. Tobias Breiten

TU Berlin, Institut für Mathematik

An approach to nonlinear observer design via optimal control theory – the Mortensen observer

State observers for dynamical systems have a rich history in research and application. For linear systems the Kalman filter offers a practically feasible and theoretically well understood solution. For non linear systems, however, research is still ongoing. In this talk we present the minimum energy estimator, proposed among others by R. E. Mortensen in 1968. In particular we discuss theoretical results on well-posedness and propose a scheme for its numerical realization.

About the speaker: Tobias Breiten studied in Kaiserslautern where he received his Diploma degree in Technomathematik in 2009. He started his PhD in the group of Peter Benner in Chemnitz which 2010 jointly moved to the Max Planck Institute in Magdeburg. As a member of the International Max Planck Research School, Tobias received his PhD from the Otto-von-Guericke Universität in 2013. In his dissertation, he discussed model reduction methods for nonlinear control systems for which he was awarded the Otto Hahn Medal from the Max Planck Society in 2014. He then moved to the University of Graz where he obtained his Habilitation in 2018 (supervised by Karl Kunisch). In 2020 he took up a professor position at Technische Universität Berlin. His current research interests include model reduction, (infinite-dimensional) control theory, PDE constrained optimization and nonlinear observer design.

Time   Thursday, 30th May 2024, 16:00
Place   Reichenhainer Str. 70, Weinhold-Bau, Room C25.014 (2/W014)