VORTRAG

Im Rahmen des Forschungszentrums für Modellierung und Simulation (MODUS)

spricht

Herr Dr. Timm Faulwasser
KIT Karlsruher Institut für Technologie

am Montag, 07. November 2016, 14 Uhr c.t., S 104, FAN B

über das Thema

“A SYSTEMS AND CONTROL APPROACH TO CLIMATE-ECONOMY INTERACTIONS”

Abstract:

To quantify the damages from anthropogenic emissions of heat-trapping greenhouse gases, specifically carbon dioxide (CO2), integrated assessment models are used to describe the dynamics of climate-economy interactions. In this talk, we consider the computation of the Social Cost of Carbon (SCC) via the Dynamic Integrated model of Climate and the Economy (DICE). Typically, any SCC computation is based on the solution of a single (long-horizon) optimal control problem. We provide an introduction to the DICE model. We also show that receding-horizon strategies can also be used to compute the SCC [1]. In receding-horizon optimal control, also known as model predictive control in the field of systems and control, one solves a sequence of short-horizon optimal control problems, of which only the first part of the optimal solution is used, instead of tackling the long-horizon optimal control problem directly. We demonstrate that tools developed in a systems and control context can be used to analyze the receding-horizon approximation of the SCC. Furthermore, we show that the receding-horizon strategy facilitates feedback, introducing an element of robustness. Additionally, we comment on different strategies of computing the SCC and a recently published open-source MATLAB implementation of DICE [2].

References


Im Namen des Forschungszentrums lade ich ganz herzlich zu diesem Vortrag ein.

Prof. Dr. Lars Grüne