

**Prof. Lars Grüne, University of Bayreuth**

## **Economic MPC without Terminal Constraints**

Abstract

Most common performance estimates for model predictive control (MPC) crucially rely on the fact that the stage cost penalizes the distance to some desired equilibrium or reference solution. While such problems often appear in technical applications, most economic optimal control problems do not have this feature.

Recent papers of Amrit, Angeli, Diehl, Rawlings and other authors have proved optimal performance of MPC for economic MPC if infinite horizon optimal equilibria or periodic orbits are computed beforehand and used as terminal constraints for the MPC scheme. In this talk we show that under appropriate structural assumptions we can avoid using such a priori information and terminal constraints.

While the rigorous results presented in the talk are restricted to averaged infinite horizon problems with a unique optimal steady state, we also provide numerical evidence indicating that the results also hold for discounted infinite horizon problems and multiple steady states.