



# Lothar-Collatz-Kolloquium für Angewandte Mathematik

**Donnerstag, den 27. Juni 2019, um 17:15 Uhr, im Hörsaal 5**

**Dr. Tobias Breiten\***

(Universität Graz, Institut für Mathematik und Wissenschaftliches Rechnen)

## *Optimal control and estimation by value function approximation*

### **Zusammenfassung/Abstract:**

Solutions to nonlinear optimal control problems are closely related to the Hamilton-Jacobi-Bellman (HJB) equation. Already for finite-dimensional systems, solving the HJB equation is a challenging task which typically requires the use of certain approximation techniques. This talk reviews approaches based on Taylor series expansions and analyzes their applicability in the context of nonlinear partial differential equations with a particular focus on the Navier-Stokes equations. Theoretical and numerical results are presented for the two and three-dimensional case. Some open problems concerning tracking-type control problems as well as extensions to optimal state estimation are discussed.

### **Kontakt:**

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Optimierung und Approximation

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