



Wir laden recht herzlich zu einem Vortrag im Rahmen des

Mathematischen Kolloquiums ein:

## Prof. Dr. Falk Hante

(Friedrich-Alexander-Universität Erlangen-Nürnberg)

### *Mixed-integer optimization with PDEs*

**Donnerstag, 16. Januar 2020**

Beginn: **17:00 Uhr**

Raum: **F426**

Interessenten sind herzlich willkommen!

S. Volkwein

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#### **Abstract:**

Motivated by challenging tasks such as minimal cost operation of gas, water or traffic networks we consider mixed-integer optimization problems subject to constraints in form of evolution type partial differential equations. The latter model the physics and integer restrictions model discrete control components, for example valves, gates or signal signs in the mentioned applications. We consider relaxation techniques in order to solve such problems in an appropriate sense locally using gradient based optimization methods. The techniques are designed such that gradients of certain subproblems can be obtained numerically very efficiently by solutions of suitable adjoint problems. The performance of these methods will be demonstrated on numerical examples.