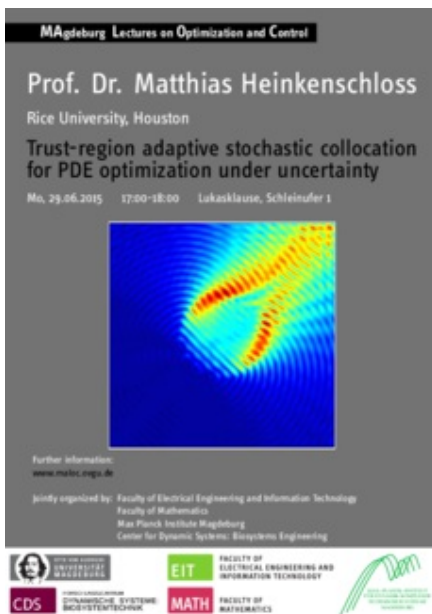


## MAGDEBURG LECTURES ON OPTIMIZATION AND CONTROL

### Past Events

#### Matthias Heinkenschloss



MAGdeburg Lectures on Optimization and Control

Prof. Dr. Matthias Heinkenschloss  
Rice University, Houston

Trust-region adaptive stochastic collocation  
for PDE optimization under uncertainty

Mo, 29.06.2015 17:00-18:00 Lukas-Klausur, Schleifufer 1

Further information:  
[www.maloc.ovgu.de](http://www.maloc.ovgu.de)

Jointly organized by: Faculty of Electrical Engineering and Information Technology  
Faculty of Mathematics  
Max-Planck-Institut Magdeburg  
Center for Dynamic Systems, Biosystems Engineering

CDS FACULTY OF ENGINEERING AND INFORMATION TECHNOLOGY  
EIT FACULTY OF ELECTRICAL ENGINEERING AND INFORMATION TECHNOLOGY  
MATH FACULTY OF MATHEMATICS

#### Trust-region adaptive stochastic collocation for PDE optimization under uncertainty

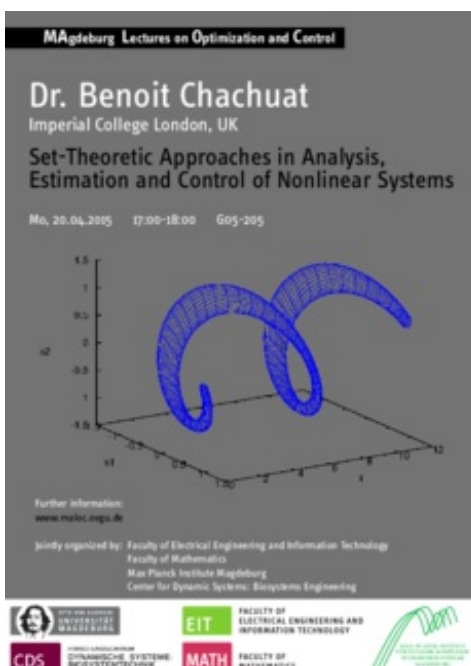
Matthias Heinkenschloss  
Department of Computational and Applied Mathematics  
Rice University

#### Time & Place

The presentation on June 29, 2015 will be given in the Lukas Klausur (Schleifufer 1, 39104 Magdeburg) (<http://ifatwww.et.uni-magdeburg.de/syst/maloc/seminars/Standort%20Lukas%20Klausur.pdf>) and starts at 5.00 p.m.

> more ... (<https://www.maloc.ovgu.de/Past/Matthias+Heinkenschloss.html>)

#### Benoit Chachuat



MAGdeburg Lectures on Optimization and Control

Dr. Benoit Chachuat  
Imperial College London, UK

Set-Theoretic Approaches in Analysis,  
Estimation and Control of Nonlinear Systems

Mo, 20.04.2015 17:00-18:00 G05-205

Further information:  
[www.maloc.ovgu.de](http://www.maloc.ovgu.de)

Jointly organized by: Faculty of Electrical Engineering and Information Technology  
Faculty of Mathematics  
Max-Planck-Institut Magdeburg  
Center for Dynamic Systems, Biosystems Engineering

CDS FACULTY OF ENGINEERING AND INFORMATION TECHNOLOGY  
EIT FACULTY OF ELECTRICAL ENGINEERING AND INFORMATION TECHNOLOGY  
MATH FACULTY OF MATHEMATICS

#### Trust-region adaptive stochastic collocation for PDE optimization under uncertainty

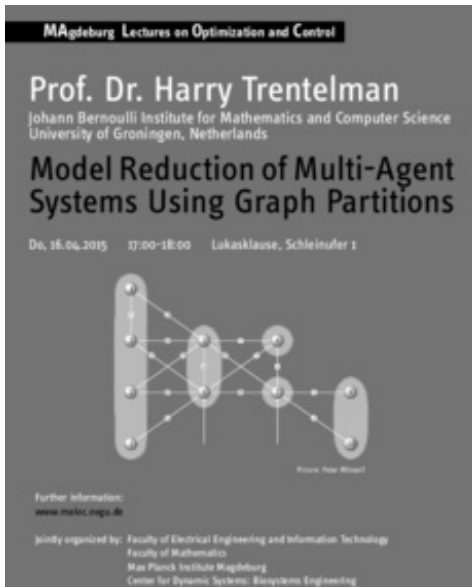
> Dr. Benoit Chachuat (<http://www.imperial.ac.uk/people/b.chachuat>)  
Faculty of Engineering  
Centre for Process Systems Engineering  
Department of Chemical Engineering  
Imperial College London  
UK

#### Time & Place

The presentation on June 29, 2015 will be given in the Senatssaal (building 05, room 205) and starts at 5.00 p.m.

> more ... (<https://www.maloc.ovgu.de/Past/Benoit+Chachuat.html>)

## Harry L. Trentelman



### Model Reduction of Multi-Agent Systems Using Graph Partitions

› Prof. Dr. Harry L. Trentelman

(<http://www.math.rug.nl/~trentelman/>)

Johann Bernoulli Institute for Mathematics and Computer Science

University of Groningen

The Netherlands

#### Time & Place

The presentation on April 16, 2015 will be given in the Lukasklausur › (Schleiufer 1, 39104 Magdeburg)

(<http://ifatwww.et.uni->

[magdeburg.de/syst/maloc/seminars/Standort%20Lukas%20Klausur.pdf](http://ifatwww.et.uni-magdeburg.de/syst/maloc/seminars/Standort%20Lukas%20Klausur.pdf)) and starts at 5.00 p.m.

#### Abstract

This talk deals with the problem of model reduction of multi-agent systems defined on a graph. Reduced order models are obtained by clustering the vertices (agents) of the underlying

communication graph by means of suitable graph partitions. In the reduction process the spatial structure of the network is preserved and the reduced order models can again be realized as multi-agent systems defined on a graph. The agents are assumed to have single-integrator dynamics and the communication graph of the original system is weighted and undirected. The proposed model reduction technique reduces the number of vertices of the graph (which is equal to the dynamic order of the original multi-agent system) and yields a reduced order multi-agent system defined on a new graph with a reduced number of vertices. This new graph is a weighted symmetric directed graph. It is shown that if the original multi-agent system reaches consensus, then so does the reduced order model. For the special case that the clusters are chosen using an almost equitable partition of the graph, we obtain an explicit formula for the H-2 norm of the error system obtained by comparing the input-output behaviors of the original model and the reduced order model. We also prove that the error obtained by taking an arbitrary partition of the graph is bounded from below by the error obtained by using the largest almost equitable partition finer than the given partition. Finally, we extend our results on single integrator dynamics to the case that the agent dynamics is an arbitrary linear input-output system.

› more ... ([https://www.maloc.ovgu.de/Past/Harry+L\\_+Trentelman-p-626.html](https://www.maloc.ovgu.de/Past/Harry+L_+Trentelman-p-626.html))

---

## Jan Maciejowski

### Fault-tolerant control using Gaussian processes and model predictive control

Prof. Jan Maciejowski

Dep. of Engineering

University of Cambridge

UK

#### Time & Place

The presentation on January 27, 2015 will be given in the Senatssaal (building 05, room 205) and starts at 5.00 p.m.

**MAGteburg Lectures on Optimization and Control**

**Prof. Jan Maciejowski, Ph.D.**  
University of Cambridge

**Fault-tolerant control using Gaussian processes and model predictive control**

Di. 22.01.2015 17:00-18:00 Senatssaal, G05-205



Further information:  
[www.maloc.ovgu.de](http://www.maloc.ovgu.de)

jointly organized by: Faculty of Electrical Engineering and Information Technology  
Faculty of Mathematics  
Max Planck Institute Magdeburg  
Center for Dynamic Systems: Biosystems Engineering

**CDS** **EIT** **MATH**

## Abstract

Essential ingredients for fault-tolerant control are the ability to represent system behaviour following the occurrence of a fault, and the ability to exploit this representation for deciding control actions. Gaussian processes seem to be very promising candidates for the first of these, and model predictive control has a proven capability for the second. We therefore propose to use the two together to obtain fault-tolerant control functionality. Our proposal is illustrated by several reasonably realistic examples drawn from flight control. Some remarks will be made about the use of a Bayesian framework for studying fault-tolerant control.

> more ... (<https://www.maloc.ovgu.de/Past/Jan+Maciejowski.html>)

## Paul Goulart

**MAGteburg Lectures on Optimization and Control**

**Prof. Dr. Paul Goulart**  
University of Oxford

**Generalized Gauss Inequalities via Semidefinite Programming**

Di. 09.12.2014 17:00-18:00 Lukasklasse, Schleiufer 1



Further information:  
[www.maloc.ovgu.de](http://www.maloc.ovgu.de)

jointly organized by: Faculty of Electrical Engineering and Information Technology  
Faculty of Mathematics  
Max Planck Institute Magdeburg  
Center for Dynamic Systems: Biosystems Engineering

**CDS** **EIT** **MATH**

## Generalized Gauss Inequalities via Semidefinite Programming

### Time & Place

The presentation on December 9, 2014 will be given in the Lukasklasse >(Schleiufer 1, 39104 Magdeburg) (<http://ifatwww.et.uni-magdeburg.de/syst/maloc/seminars/Standort%20Lukas%20Klausur.pdf>) and starts at 5.00 p.m.

> more ... (<https://www.maloc.ovgu.de/Past/Paul+Goulart.html>)

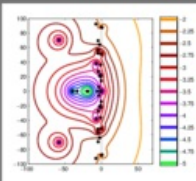
## Michael Overton

**MAGteburg Lectures on Optimization and Control**

**Prof. Michael L. Overton, Ph.D.**  
New York University

**Fast Approximation of the  $H_\infty$  Norm via Optimization over Spectral Value Sets**

Di. 04.11.2014 17:00-18:00 Lukasklasse, Schleiufer 1



Further information:  
[www.maloc.ovgu.de](http://www.maloc.ovgu.de)

jointly organized by: Faculty of Electrical Engineering and Information Technology  
Faculty of Mathematics  
Max Planck Institute Magdeburg  
Center for Dynamic Systems: Biosystems Engineering

**CDS** **EIT** **MATH**

## Fast Approximation of the $H_\infty$ Norm via Optimization over Spectral Value Sets

### Time & Place

The presentation on November 4, 2014 will be given in the Lukas Klasse >(Schleiufer 1, 39104 Magdeburg) (<http://ifatwww.et.uni-magdeburg.de/syst/maloc/seminars/Standort%20Lukas%20Klausur.pdf>) and starts at 5.00 p.m.

> more ... (<https://www.maloc.ovgu.de/Past/Michael+Overton.html>)

## Prof. Carsten W. Scherer

## From Gain-Scheduling to Distributed Control

### Time & Place

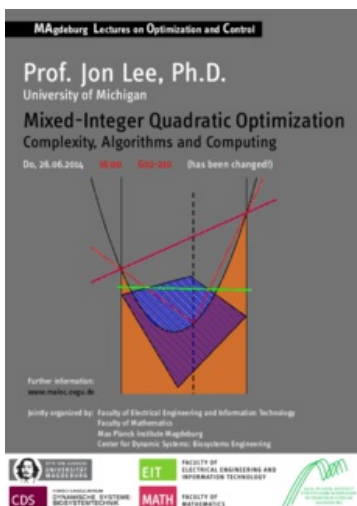
The presentation on June 16, 2014 will be given at the Otto-von-



Guericke-Universität Magdeburg, Universitätsplatz 2, building 03 - room 106 and starts at 4.45 p.m.

> more ... ([https://www.maloc.ovgu.de/Past/Prof\\_+Carsten+W\\_+Scherer-p-634.html](https://www.maloc.ovgu.de/Past/Prof_+Carsten+W_+Scherer-p-634.html))

## Vortrag: Prof. Jon Lee, Ph.D.



### Mixed-Integer Quadratic Optimization: Complexity, Algorithms and Computing

#### Time & Place

The presentation on June 26, 2014 will be given at the Otto-von-Guericke-Universität Magdeburg, Universitätsplatz 2, building 2 - room 210 and starts at 4 p.m.

> more ... ([https://www.maloc.ovgu.de/Past/Vortrag\\_+Prof\\_+Jon+Lee\\_+Ph\\_D\\_-p-636.html](https://www.maloc.ovgu.de/Past/Vortrag_+Prof_+Jon+Lee_+Ph_D_-p-636.html))

## Vortrag: Prof. Dr. Alexander Martin



> more ...

([https://www.maloc.ovgu.de/Past/Vortrag\\_+Prof\\_+Dr\\_+Alexander+Martin-p-638.html](https://www.maloc.ovgu.de/Past/Vortrag_+Prof_+Dr_+Alexander+Martin-p-638.html))

## Vortrag Prof. Bernd Sturmfels

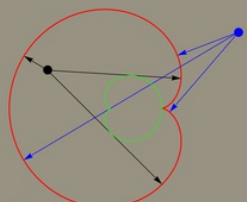
**December 4, 2013, 5.30 p.m. at Lukasklause, Schleinufer 1**  
**The Euclidean Distance Degree**

**Magdeburg Lectures on Optimization and Control**

**Prof. Dr. Bernd Sturmfels**  
UC Berkeley and MPI Bonn


## The Euclidean Distance Degree

Mi, 04.12.2013 17:30-18:30 Lukasklausur, Schleifer 1



Further information:  
[www.math.ovgu.de/Forschung/IG/MALOC.html](http://www.math.ovgu.de/Forschung/IG/MALOC.html)

jointly organized by: Faculty of Electrical Engineering and Information Technology  
Faculty of Mathematics  
Max Planck Institute Magdeburg  
Center for Dynamic Systems: Biosystems Engineering



› more ... (<https://www.maloc.ovgu.de/Past/Bernd+Sturmfels.html>)

« 1 2 4 »



RSS (<https://www.maloc.ovgu.de/Past.rss>)



FAKULTÄT FÜR  
ELEKTROTECHNIK UND  
INFORMATIONSTECHNIK



MAX PLANCK INSTITUT  
FÜR DYNAMISCHE KOMPLEXE  
TECHNISCHER SYSTEME  
MAGDEBURG



FAKULTÄT FÜR  
MATHEMATIK



FORSCHUNGSZENTRUM  
DYNAMISCHE SYSTEME:  
BIOSYSTEMTECHNIK