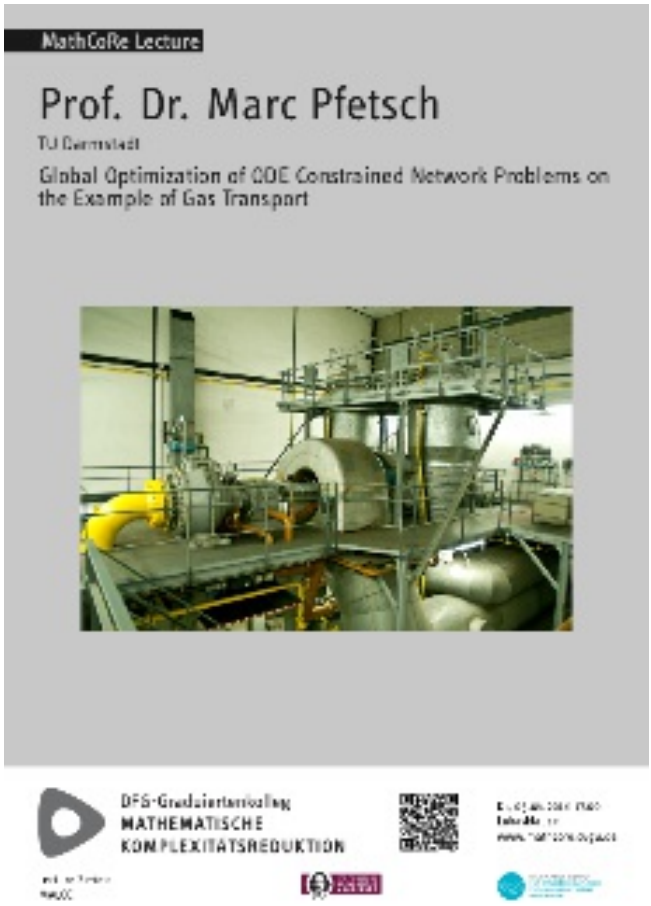
OTTO VON GUERICKE UNIVERSITÄT MAGDEBURG

MAGDEBURG LECTURES ON OPTIMIZATION AND CONTROL

MathCoRe Lecture



23.04.2018 - **Global optimization of ODE constrained network problems on the example of gas transport**

› Prof. Dr. Marc Pfetsch (http://www.mathematik.tu-darmstadt.de/~pfetsch/) TU Darmstadt

Time & Place
The presentation on June, 5, 2018 will be given in the Lukasklause ›(Schleinufer 1, 39104 Magdeburg) (http://ifatwww.et.uni-magdeburg.de/syst/maloc/seminars/Standort%20Lukas%20Klause.pdf) and starts at 5.00 p.m. (Historischer Raum).

Abstract
This talk considers a global optimization approach to solve mixed integer nonlinear optimization problems with ordinary differential equation constraints in network problems. We combine techniques from mixed-integer nonlinear programming with an adaptive discretization of differential equations within a spatial branch-and-bound framework. We show that certain discretization schemes allow to construct lower and upper convex relaxations for the ODE constraints, which are then used to construct linear relaxations. This approach does not need to introduce additional variables for the different discretization nodes. We will illustrate our approach on the example of stationary gas transport and will present computational results.