



Berlin  
Mathematical  
School

## BMS Friday Colloquium

Friday 21 October 2016 at 14:15

*Tea & Cookies starting at 13:00*

BMS Loft, Urania, An der Urania 17, 10787 Berlin

### Alexander Martin

*(FAU Erlangen-Nürnberg)*

#### Combinatorial Optimization Problems with Physical Constraints

In this talk, Alexander Martin will present combinatorial optimization problems such as the network flow or Steiner tree problem subject to physical side constraints. The latter result, for instance, comes from the transport of gas or hot steam in a piping system. Mathematically, these problems lead to mixed integer optimization models with linear, non-linear or even partial differential equations and inequalities.

Martin will look at some of the working horses in combinatorial optimization and integer programming, such as decomposition, disjunctions and cutting planes, and analyze whether and to what extent they may be used to solve these more complex structures. Pros and cons will be discussed on two real-world case studies: the transportation of gas in networks and the design of high pressure piping systems.

Alexander Martin is a German mathematician. His research interests include mathematical models and methods in optimization. In 2010, he became a mathematics professor at Friedrich-Alexander University Erlangen-Nürnberg, where he is currently the chair of the research group "Economy, Discrete Optimization, Mathematics (EDOM)". He did his PhD and habilitation at TU Berlin in 1992 and 1998, respectively, then held positions at ZIB (1998-2000) and TU Darmstadt (2000-2010). His awards include the "Hessischen Kooperationspreis 2007" (third) and the "EURO Excellence in Practice Award 2016".



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