

## VORTRÄGE

**Mittwoch, 11. Oktober 2017 16:15 bis 17:15**, Sky Lounge, 12. OG, OMP 1

**Mathematisches Kolloquium: Daniel Ševčovič (Comenius University Bratislava): "Construction of the optimal anisotropy function for the inverse Wulff problem by means of the enhanced semidefinite relaxation method "**

Org: Scherzer

*The classical isoperimetric inequality is related to the ratio between the square of the length of a Jordan curve in the plane and the area enclosed by this curve. It was already known in Ancient Greece that the minimizer of the isoperimetric ratio is a circle. Later crystallographer Georg Wulff generalized the isoperimetric inequality in the framework of the so-called relative Finsler geometry in which the geometric length of a curve is replaced by the length weighted by a given anisotropy function depending on the orientation of a curve and characterizing the Finsler geometry. He also showed that the minimum of the anisoperimetric ratio is attained by a curve which is known as the Wulff shape corresponding to the given anisotropy function. In this talk we focus our attention on the inverse Wulff problem which consists in construction of the underlying anisotropy function minimizing the anisoperimetric ratio for a given Jordan curve in the plane. The problem can be formulated in terms of minimization of a non-convex variational functional. It can be approximated by a sequence of finite dimensional non-convex quadratic optimization problems with linear matrix inequalities. We solve this nonlinear programming problem by means of the so-called enhanced semidefinite relaxation method. It is based on solving a convex semidefinite problem obtained by a convex relaxation of the original problem. We show that the sequence of finite dimensional approximations of the anisotropy function converges to a solution of the inverse Wulff problem. We present several computational examples, including those corresponding to construction of a nearly hexagonal anisotropy function for curves representing real snowflake boundaries. The presentation is based on the joint work with Mária Trnovská: Solution to the Inverse Wulff Problem by Means of the Enhanced Semidefinite Relaxation Method, Journal of Inverse and Ill-posed Problems 23(3) 2015, 263-285.*

**Vinum cum pane im Anschluss**

## BERUFUNGSVORTRÄGE Stochastik

**Freitag, 13. Oktober 2017 10:00 bis 10:20**, Sky Lounge, 12. OG, OMP 1

**Didaktischer Vortrag: Hendrik Weber (Univ. of Warwick): "Lindeberg's proof of the Central Limit Theorem"**

**Freitag, 13. Oktober 2017 10:30 bis 11:15**, Sky Lounge, 12. OG, OMP 1

**Wissenschaftlicher Vortrag: Hendrik Weber (Univ. of Warwick): "The Phi-4-equation - scaling limits, meta-stability and the role of infinity"**

**Freitag, 13. Oktober 2017 16:00 bis 16:20**, Sky Lounge, 12. OG, OMP 1

**Didaktischer Vortrag: Shkolnikov Mykhaylo (Princeton): "Mathematical analysis of card shuffling"**

**Freitag, 13. Oktober 2017 16:30 bis 17:15**, Sky Lounge, 12. OG, OMP 1

**Wissenschaftlicher Vortrag: Shkolnikov Mykhaylo (Princeton): "A new approach to the largest eigenvalue of random matrices"**

[https://mathematik.univie.ac.at/fileadmin/user\\_upload/f\\_mathematik/Vortraege/2017\\_18/Teil2\\_Presentationstermine\\_m.\\_Vortraegen\\_Stochastik.pdf](https://mathematik.univie.ac.at/fileadmin/user_upload/f_mathematik/Vortraege/2017_18/Teil2_Presentationstermine_m._Vortraegen_Stochastik.pdf)

**Montag, 09. Oktober 2017 10:00 bis Freitag, 13. Oktober 2017 12:30**, TU Wien

**Timetable: "Alea in Europe"**

Org: M. Drmota

<http://dmgtuwien.ac.at/AleaInEurope17/index.php?action=home>

**Montag, 09. Oktober 2017 10:00 bis Freitag, 13. Oktober 2017 12:30**, ESI, Boltzmann Lecture Hall, Boltzmannngasse 9/2, 1090 Wien

**Workshop 2 - Tractability of high dimensional problems: "Tractability of High Dimensional Problems and Discrepancy"**

Org: J. Dick (U New South Wales, Sydney), P. Grabner (TU Graz), A. Hinrichs (U Linz), F. Pillichshammer (U Linz), H. Wóznickowski (Columbia U and U Warsaw))

[https://mathematik.univie.ac.at/fileadmin/user\\_upload/f\\_mathematik/Vortraege/2017\\_18/pdg\\_ws2.pdf](https://mathematik.univie.ac.at/fileadmin/user_upload/f_mathematik/Vortraege/2017_18/pdg_ws2.pdf)

**Dienstag, 10. Oktober 2017 14:15 bis 15:15**, TU Wien, Freihaus, SEM 136, 10. Stk., Wiedner Hauptstr. 8-10, 1040 Wien

**SE Mathematische Physik**: Olaf Krüger (U Wien): "The Embedding of gauged  $N=8$  supergravity into 11 dimensions"

Org: S. Fredenhagen

[https://mathematik.univie.ac.at/fileadmin/user\\_upload/f\\_mathematik/Vortraege/2017\\_18/Seminareinladung\\_Mathematik\\_Krueger\\_10Oktober2017.pdf](https://mathematik.univie.ac.at/fileadmin/user_upload/f_mathematik/Vortraege/2017_18/Seminareinladung_Mathematik_Krueger_10Oktober2017.pdf)

**Dienstag, 10. Oktober 2017 15:15 bis 17:00**, SR 09, 2. OG, OMP 1

**Geometry and Analysis Groups Research SE**: Karen Vogtmann (Univ. of Warwick): "Jewels in Outer space"

Org: G. Arzhantseva, Ch. Cashen and M. Finn-Sell

<http://www.mat.univie.ac.at/~gagt/abstracts/171010.html>

**Dienstag, 10. Oktober 2017 16:15 bis 17:15**, Fakultät für Physik, Erwin Schrödinger-Hörsaal, Boltzmannng. 5, 5. St., 1090 Wien

**Christopher T. Sachrajda (Univ. of Southampton)**: "Precision Flavour Physics and Lattice QCD: A path to discovering new physics"

Org: A. Hoang, H. Neufeld, G. Ecker

[https://mathematik.univie.ac.at/fileadmin/user\\_upload/f\\_mathematik/Vortraege/2017\\_18/PDG2.pdf](https://mathematik.univie.ac.at/fileadmin/user_upload/f_mathematik/Vortraege/2017_18/PDG2.pdf)

**Mittwoch, 11. Oktober 2017 11:30 bis 13:00**, HS 11, 2. OG, OMP 1

**NuHAG Seminar**: Thomas Sauer (Lehrstuhl für Mathematik mit Schwerpunkt Digitale Bildverarbeitung FORWISS, U Passau, Frauenhofer IIS Research Group): "Anisotropy: Why and How"

Org: KH. Gröchenig

[http://www.univie.ac.at/nuhag-php/program/talks\\_details.php?id=3380](http://www.univie.ac.at/nuhag-php/program/talks_details.php?id=3380)

**Mittwoch, 11. Oktober 2017 15:30 bis 16:30**, ESI, Boltzmann Lecture Hall, Boltzmanngasse 9/2, 1090 Wien

**ESI-SE**: David Mukamel (The Weizmann Inst. of Science): "Mixed order phase transitions: from DNA denaturation to jamming processes"

Org: H. Posch

[https://mathematik.univie.ac.at/fileadmin/user\\_upload/f\\_mathematik/Vortraege/2017\\_18/Mukamel.pdf](https://mathematik.univie.ac.at/fileadmin/user_upload/f_mathematik/Vortraege/2017_18/Mukamel.pdf)

**Donnerstag, 12. Oktober 2017 13:45 bis 15:15**, SR 10, 2. OG., OMP 1

**Vortrag**: Sergio Carrillo (Universität Wien): "Spaces of asymptotically developable functions II."

Org: A. Kriegel, P. Michor, A. Rainer

**Donnerstag, 12. Oktober 2017 14:00 bis 16:00**, BZ 2, 2. OG, OMP1

**AG Ergodentheorie**: Henk Bruin (U Wien): "On matching for interval maps"

Org: H. Bruin, R. Zweimüller

[http://mat.univie.ac.at/~zweimueller/AG\\_ETHY.html](http://mat.univie.ac.at/~zweimueller/AG_ETHY.html)

**Donnerstag, 12. Oktober 2017 16:00 bis 18:00**, KGRC, Währingerstr. 25, 2 OG, Room 101

**KGRC Seminar**: Yizheng Zhu (U. Münster, Germany): "The internal structure of  $HOD L[x]$ "

Org: KGRC

[http://www.logic.univie.ac.at/2017/Talk\\_10-12\\_a.html](http://www.logic.univie.ac.at/2017/Talk_10-12_a.html)

**Donnerstag, 12. Oktober 2017 16:30 bis 18:00**, SR 11, 2. OG., OMP 1

**VSMFP**: Gaoyue Guo (Univ. of Oxford): "Numerical computation of martingale optimal transportation"

<https://fam.tuwien.ac.at/events/vs-mfp/>

**Freitag, 13. Oktober 2017 14:15 bis 15:00**, SR 05, 1 OG., OMP 1

**Mourad E. H. Ismail (Univ. of Central Florida)**: "The  $n$ -dimensional Hermite polynomials"

Org: M. Schlosser

**Freitag, 13. Oktober 2017 13:15 bis 14:15**, SR 03, 1. OG, OMP 1

**öffentliche Defensio:** Kevin Kofler (Univ. Wien): "Dynamic Generalized Parsing and Natural Mathematical Language"

Org: G. Hörmann, A. Neumaier, A. Ranta, M. Kohlhase

[https://mathematik.univie.ac.at/fileadmin/user\\_upload/f\\_mathematik/Vortraege/2017\\_18/Hesse.pdf](https://mathematik.univie.ac.at/fileadmin/user_upload/f_mathematik/Vortraege/2017_18/Hesse.pdf)