Final Program

Pure and Applied Linear Algebra: The new Generation

17th Conference of the
International Linear Algebra Society
in Braunschweig, Germany

August 22-26, 2011

Technische Universität Braunschweig

Local Organizing Committee

Heike Faßbender (TU Braunschweig, Carl-Friedrich-Gauß-Fakultät, Institut *Computational Mathematics*)

Matthias Bollhöfer (TU Braunschweig, Carl-Friedrich-Gauß-Fakultät, Institut *Computational Mathematics*)

Peter Benner (Max Planck Institute for Dynamics of Complex Technical Systems, Magdeburg and TU Chemnitz, Fakultät für Mathematik, Mathematik in Industrie und Technik)

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Jürgen Köpke:
Figure 2, p. 9

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1 General Information

Hosting Institution

The *Technische Universität Braunschweig* is one of the oldest technical universities in Germany, with a long history and tradtion going back to the year 1745. It is proud to host the seventeenth ILAS conference on pure and applied linear algebra with a special emphasis on young speakers this year.

Venue

The conference will be held on the main campus of the Technische Universität Braunschweig close to the city center. Its address is:

Technische Universität Braunschweig
Pockelsstraße 4
38106 Braunschweig
Germany

The old and new integrated buildings provide excellent facilities including lecture rooms, and coffee break areas that will be used during the conference.

Braunschweig is located in the North of Germany 200 km west of Berlin, and 200 km south of Hamburg. It is an important research region with a population of about 300.000 inhabitants including 20.000 students.

Local organizing committee

We, and all staff of the TU Braunschweig, would like to welcome you warmly. We wish you an enjoyable conference week and stay in Braunschweig. The following information was prepared to help you during your visit here.

Your sincerely,

Heike Faßbender
(TU Braunschweig,
Carl-Friedrich-Gauß-Fakultät,
Institut *Computational Mathematics*)

Matthias Bollhöfer
(TU Braunschweig,
Carl-Friedrich-Gauß-Fakultät,
Institut *Computational Mathematics*)

Peter Benner
(Max Planck Institute for Dynamics of Complex Technical Systems, Magdeburg and
TU Chemnitz, Fakultät für Mathematik, Mathematik in Industrie und Technik)

Guest Information

Registration Desk

The registration desk is located on the ground floor next to the main entrance of the *Altgebäude*, Pockelsstraße 4; see the map on page 5.

The *opening hours* of the registration desk are:

Sunday	17:00 - 19:00
Monday, Tuesday	08:30 - 16:00
Wednesday	08:30 - 13:00
Thursday, Friday	08:30 - 16:00

If you have general questions concerning the conference, or if you require further assistance, please do not hesitate to ask our staff at the reception area.

Rooms and Facilities

All lectures and sessions take place at the *Altgebäude*, Pockelsstraße 4; see ❶ on page 4. All lecture rooms are located at the ground floor of this building; see page 5.

The *Architektenpavillon* (or short: pavilion) is our conference lounge that is located in the Altgebäude; see page 5. It is open during the opening hours of the registration desk.

Note that the restrooms can be found at the basement floor of the Altgebäude.

Presentation and Technical Information

The official language of the conference will be English. No simultaneous translation will be available.

All speakers of contributed sessions are kindly asked to stick strictly to fifteen minutes presentation time, plus five minutes for discussion.

To ensure smooth proceedings, all speakers should upload your presentation at your dedicated lecture room in advance; preferably during the break immediately before your session starts.

Every lecture room is equipped with one screen and one data projector as well as one notebook operating under Windows 7. The following software will be preinstalled: Adobe Acrobat 10.1, Microsoft Office Power Point 2007. Moreover, all rooms are equipped with a blackboard which can not be used at the same time as the screen is used.

Technical assistance will be available throughout all sessions for operating the notebook and in case of connection and display problems.

Internet and WiFi

Free WiFi Access will be available at the conference site. A number of E-mail stations will also be available for attendee to use. The computer lab (PK14.9) is located in the *Forumsgebäude* (Pockelsstraße 14, 6th floor, building opposite to the Altgebäude); see ❷ on page 4. Detailed information

will be given to you at your registration.

If your home institution is part of the world-wide eduroam project and you have configured access to a wireless lan with SSID "eduroam" on your laptop, you will be able to use this same configuration at TU Braunschweig to access its wireless lan.

Miscellaneous

The Conference Organizers and the TU Braunschweig regret that they cannot accept any liability or responsibility whatsoever for any loss of, or damage to persons, personal property, vehicles, and contents.

ATM

Credit card payments are not accepted everywhere. An on-campus automatic teller machine is located at Katharinenstraße 2. The closest banks to the campus are: *Deutsche Bank AG*, Hagenring 71-72, or *Braunschweigische Landessparkasse*, Mühlenpfordtstr. 4/5. More banks can be found in the city center.

Public Transportation

For this purpose, we refer to the website www.braunschweiger-verkehrs-ag.de of the *Braunschweiger Verkehrs AG*. You may download time tables by following one of these steps:

1. Click on *Fahrpläne* for a full list of time tables; only in German.
2. Click on *Fahrplanauskunft*, and then on *Elektronische Fahrplanauskunft EFA* for a journey planner. An English interface is available.

Bus stops and routes at the main campus are:

Pockelsstraße Bus route: M19

Hamburger Straße Bus route: M19

Hans-Sommer-Straße Bus route: M19

Bültenweg Bus route: M19

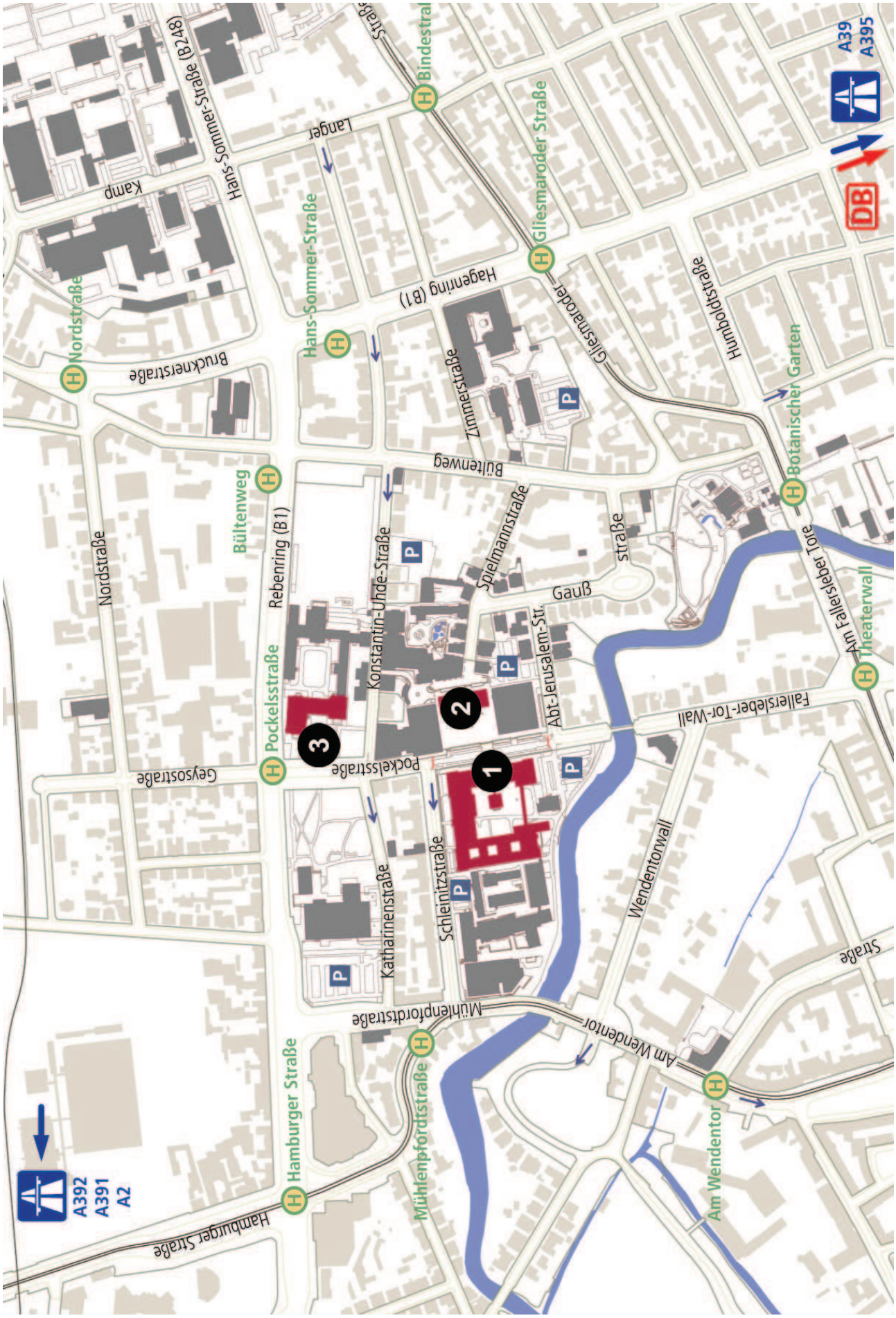
Tram stops at the main campus are:

Hamburger Straße Tram lines: M1, M2

Mühlenpfordtstraße Tram lines: M1, M2

Botanischer Garten Tram line: M4

Note that bus or tram stops are indicated by Ⓗ in the map on page 4.


A392
A391
A2
Hamburger Straße
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Fallersleber-Tor-Wall
Am Fallersleber Tore
Theaterwall
Botanischer Garten
Gliesmaroder Straße
Humboldtstraße
A39
A395
DB
Bindestraße
Hagenring (B1)
Zimmerstraße
Hans-Sommer-Straße
Langer
Hans-Sommer-Straße (B248)
Kamp
Nordstraße
Brucknerstraße
Bültenweg
Rebenring (B1)
Nordstraße
Geysostraße
Pockelsstraße
Pockelsstraße
Konstantin-Uhde-Straße
Spielmannstraße
Gauß
straße
Abt-Jerusalem-Str.
Schleinitzstraße
Katharinenstraße
Bültenweg
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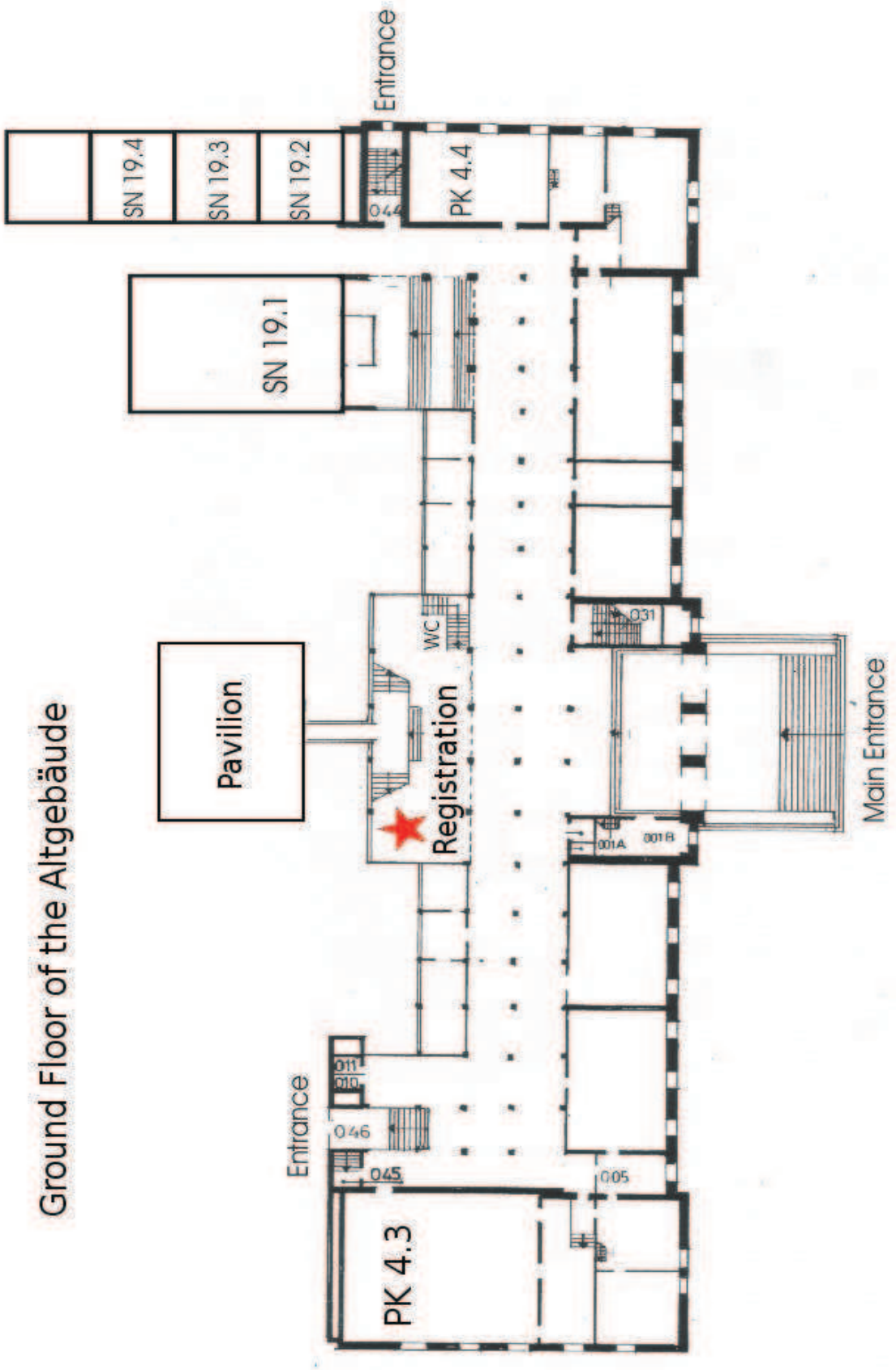

Ground Floor of the Altgebäude
Entrance
SN 19.4
SN 19.3
SN 19.2
044
PK 4.4
SN 19.1
WC
031
Pavilion
Registration
Main Entrance
001A
001B
011
010
046
045
005
Entrance
PK 4.3

Restaurants and Cafés

For your convenience, we list a number of restaurants and cafés below. They are open for lunch and dinner. Downtown you will find more restaurants for dinner.

Bistros and Cafés

1 **Herman's**
Schleinitzstraße 18 ∗ Phone: 0531 2337411 ∗ www.hermans-cafe.de

3 **Eusebia**
Spielmannstraße 11 ∗ Phone: 0531 346329 ∗ www.eusebia.de

5 **Rodizio Brazil** - *Brazilian Food* -
Mittelweg 7 ∗ Phone: 0531 2371200 ∗ www.gastwerk.net

5 **Bistro Rodizio** - *Tapas and Snacks* -
Mittelweg 7 ∗ Phone: 0531 2371200 ∗ www.gastwerk.net

6 **Dialog**
Rebenring 48 ∗ Phone: 0531 331455 ∗ www.restaurant-dialog.de

8 **Knochenhauer**
Fallersleber Straße 35 ∗ Phone: 0531 20893472

13 **Viertel Nach**
Bültenweg 89 ∗ Phone: 0531 6175319

Restaurants

2 **La Cupola** - *Fine Italian Cuisine* -
Pockelsstraße 11 ∗ Phone: 0531 16608 ∗ www.lacupola.de

4 **Parco** - *Italian Cuisine* -
Bültenweg 95 ∗ Phone: 0531 3808202 ∗ www.parco-bs.de

7 **El Gaucho** - *Steak House* -
Wendenring 1-4 ∗ Phone: 0531 342884 ∗ www.el-gaucho-steakhouse.de

9 **Da Paolo** - *Fine Italian Cuisine* -
Kasernenstraße 20 ∗ Phone: 0531 338722 ∗ www.lindenhof-dapaolo.de

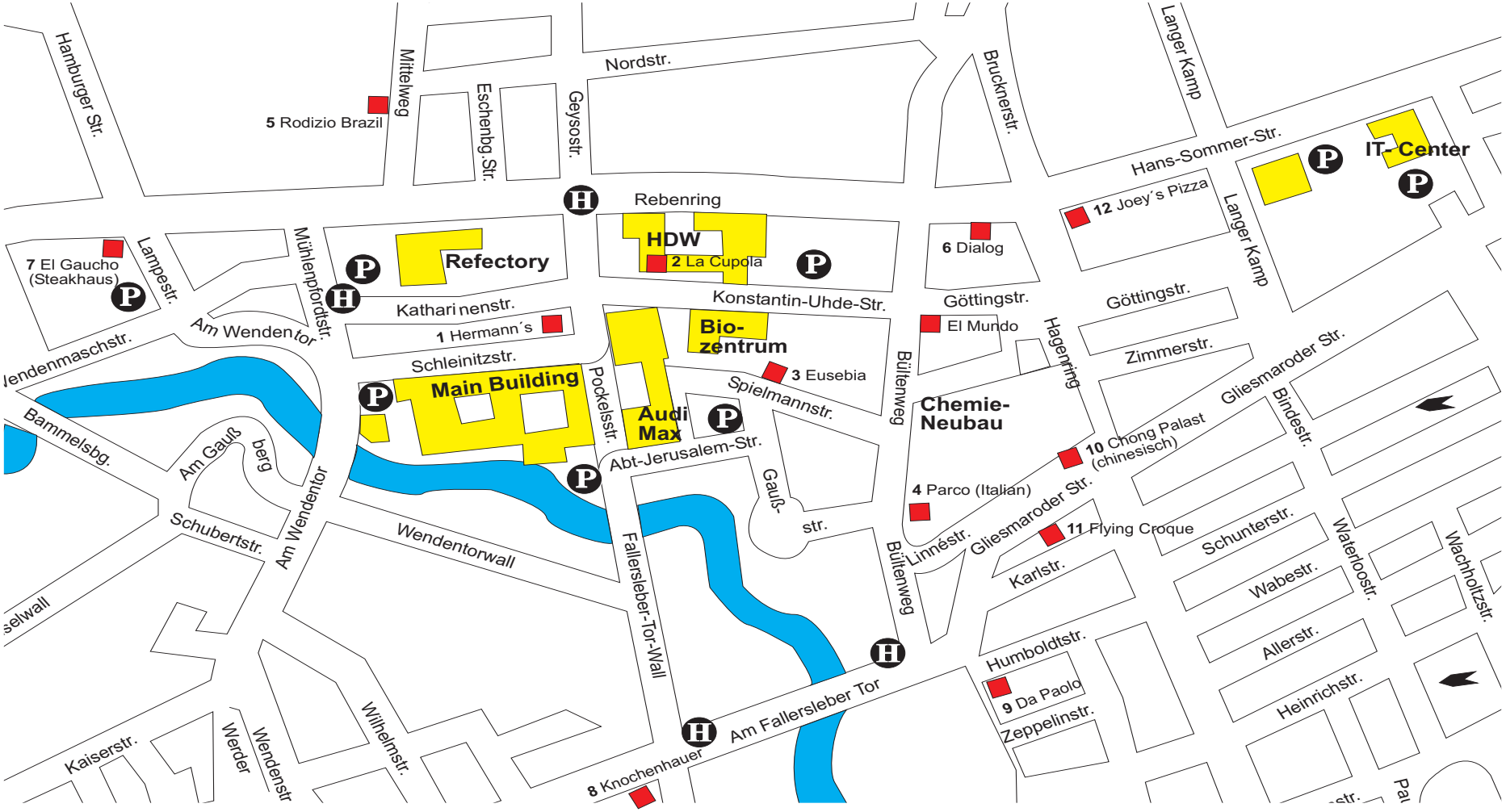
10 **Choong Palast** - *Chinese Cuisine* -
Gliesmaroder Str. 15 ∗ Phone: 0531 2340009 ∗ www.choong-palast.de

Fast Food

11 **Flying Croque** - *Croques and Baquettes* -
Gliesmaroder Straße 112 ∗ Phone: 0531 83333 ∗ www.flyingcroque-bs.de

12 **Joey's Pizza** - *Pizza* -
Hans-Sommer-Straße 79 ∗ Phone: 0531 60949560 ∗ www.joeys.de

Restaurants and Cafés



Special Events

We offer a number of special events that we introduce below. If you are interested in it, please make reservation during the open hours at the registration desk on Monday.

Schedule of Special Events

Sunday, 21.08.2011	Welcome Reception; see page 9.
Monday, 22.08.2011	Reception at the Old Town Hall (Dornse); see page 9.
Tuesday, 23.08.2011	Raft Tour on the *Oker* River; see page 8.
Wednesday, 24.08.2011	Excursion and Conference Dinner; see page 10.
Thursday, 25.08.2011	Guided City Tour with Hugo as C. F. Gauß; see page 9.

Special Events – Extra Fee

Raft Tour on the Oker River .....

Date: Tuesday, August 23
Time: 18:00 - 20:00 (approximately 2 hours)
Meeting point: Altgebäude, Pockelsstraße 4
Fee: 9,80 € per person

If you wish to discover Braunschweig from a different angle and relax at the same time, the raft tour on the Oker river will be a good choice. Note that a maximal number of 45 persons can participate at this tour. If you wish to book it, a fee of 9,80 € per person has to be paid at the registration desk on Monday.

Figure 1: Raft tour on the Oker

Note that drinks can be purchased at the raft tour, but it is also possible to bring your own food and drinks on board.

Guided City Tour with Hugo as C. F. Gauß

Date: Thursday, August 25
Time: 18:00 - 20:00 (approximately 2 hours)
Meeting point: Altgebäude, Pockelsstraße 4
Fee: 12 € per person

Hugo alias "the Prince of Mathematics" will report of both – his life and the historical city *Braunschweig*. In the role of the famous mathematician *Carl Friedrich Gauß*[1], he will talk about his scientific achievements as well as the eventful and historical environment at this time. There will be a walk from the Altgebäude over the Gauß's memorial monument to the historic city hall. Note that a maximal number of 30 persons can participate at this tour. If you wish to book it, a fee of 12€ per person has to be paid at the registration desk on Monday or Tuesday.

Figure 2: Hugo as Gauß

Special Events – included

Welcome Reception

Date: Sunday, August 21
Time: 17:00 - 19:00
Meeting point: Pavilion, Pockelsstraße 4

Reception at the Old Town Hall (Dornse)

Date: Monday, August 22, 2011
Time: 19:00 - 21:00
Meeting point: Dornse, Altstadtrathaus, Altstadtmarkt 7
This reception is sponsored by prudsys.

[1] C. F. Gauß: (30 April 1777 – 23 February 1855) born in Braunschweig, German mathematician and scientist who contributed significantly to many fields, including number theory, statistics, analysis, differential geometry, geodesy, geophysics, electrostatics, astronomy and optics.

Figure 3: Town Hall at the Altstadtmarkt

Figure 4: Burgplatz

Excursion and Conference Dinner

It is our pleasure to invite you to our *Excursion to Goslar*[2] followed by the *Conference dinner*[3] on Wednesday, August 24, 2011. The excursion as well as the conference dinner are covered by your conference fee.
Please bring along the dinner tickets that you have received with your registration material.

There will be two options of guided tours in Goslar:

1. *Old Town of Goslar*
2. *Mines of Rammelsberg*

Both sites have been UNESCO World Heritage Sites since 1992. Thus, they are valuable cultural monuments in Germany today. Further details of the guided tours are provided here.

Tour I: Old Town of Goslar

Date: Wednesday, August 24
Time: 14:30 - 16:30

The heart of the *Old Town of Goslar* consists of more than 1.500 timber-framed buildings of various epochs, and it is surrounded by a former town wall. Its rich history can be revived by an entertaining guided tour, or by walking along the narrow cobbled alleys. The guided city tour includes 30 minutes to view the *Kaiserpfalz* (in Engl.: the Imperial Palace of Goslar). It is a historical building complex at the foot of the Rammelsberg hill in the south of the town of Goslar north of the Harz mountains, central Germany. Since 1992, the palace site has been a UNESCO world heritage site.

[2]Goslar is a historical town located on the northwestern slopes of the Harz mountain range, in Lower Saxony, Germany.

[3]Address of the restaurant: Brauhaus Goslar, Marktkirchhof 2, 38640 Goslar, Phone: 05321 685804, Fax: 05321 685805, www.brauhaus-goslar.de

Figure 5: Market square at Town Hall

Figure 6: Kaiserpfalz

Tour II: Mines of Rammelsberg

Date: Wednesday, August 24
Time: 14:30 - 16:00 (Group I of 30 participants)
Time: 14:45 - 16:15 (Group II of 25 participants)

The *Mines of Rammelsberg* are one of the most outstanding industrial monuments in Europe, from which ore was gained for over 1.000 years. It is a museum today. The duration of the guided tours is about an hour plus 30 minutes for the museum or exhibitions. After this tour, the bus will be waiting to take you to the city center.

After both tours, there will be free time to explore Goslar on your own and to buy souvenirs for family and friends.

Figure 7: Rammelsberg

Figure 8: Röderstollen Kanekuhler Kehrrad

Please choose between Tour I and II. Tickets can be picked up at the registration desk on Monday and Tuesday. For Tour II there is only a limited number of tickets available.

Brauhaus Goslar

The *Brauhaus Goslar* (in Engl.: Brewery of Goslar) is the only restaurant in Goslar with its own brewery. Its adress is:

Brauhaus Goslar
Marktkirchhof 2
38640 Goslar

Phone: 05321 685804 ∗ Fax: 05321 685805 ∗ www.brauhaus-goslar.de

Note that guided tours through the brewery will be offered to small and randomly formed groups by the owner. They start before dinner at 17:30, and will be continued after dinner if required. A tour takes about 15 minutes. During these tours, you will learn about the history of brewery in Goslar, and the famous Goslarian beer GOSE[4]. You will also be taught about the art of brewing by the GOSE master brewer *Odin Paul* himself, and additionally see a master brewer at work in real life.

Figure 9: Brauhaus Logo

Figure 10: Masting

[4]Gose is a top-fermented beer style. It was first brewed in the early 18th century in the town of Goslar, from which its name derives.

Program including Excursion and Conference Dinner

13:30 **Departure (Braunschweig - Goslar)** at *Haus der Wissenschaft, Pockelsstraße 11*; see ❸ on page 4.

Due to the short break between the end of the sessions and the start of the excursion, we offer a complimentary boxed lunch to be picked up at the registration desk.

14:30 **Begin of the guided tours to the UNESCO World Heritage Sites: the *Old Town of Goslar* or the *Mines of Rammelsberg***

Note that it may be cold and wet in the mines. Thus, equip yourself with coat and sturdy shoes.

17:30 **Guided tours at the Brewery of Goslar**

Note that these tours will be offered to small groups. They start before dinner, and will be continued after dinner if required. A tour takes about 15 minutes.

19:00 **Conference Dinner at the Brauhaus Goslar**

Please put your colored dinner tickets on the table such that the serving staff can see them, and know what you have ordered.

21:00/ 21:30/ 22:00 **Return (Goslar - Braunschweig)**
Note that one bus will return at 21:00, one at 21:30, and the last one at 22:00.

22:00/ 22.30/ 23:00 **Arrival in Braunschweig**

Remark: For those who cannot or do not want to participate in any guided tour, but wish to join the conference dinner, there will be an extra bus tour departing from *Haus der Wissenschaft, Pockelsstraße 11*, at 17:00. Reservations have to be made at the registration desk by Monday or Tuesday.

Conference Dinner

For the main course, at the time of registration you were asked to choose one of the following meals. The dinner ticket you received with your conference material will show your choice. Please bring the ticket to the dinner.

∗ ∗ ∗ **Meal I - blue ticket** ∗ ∗ ∗
Three small filets (pork, beef, and chicken breast) with dark beer sauce,
roasted potatoes, and string beans served in an iron pan

∗ ∗ ∗ **Meal II - red ticket** ∗ ∗ ∗
Goslarian beer roasted pork with dark beer sauce,
string beans with bacon, and salted potatoes

∗ ∗ ∗ **Meal III - green ticket** ∗ ∗ ∗
A mixed salad

∗ ∗ ∗ **Meal IV - yellow ticket** ∗ ∗ ∗
A warm lentil salad

All drinks listed below are all-inclusive:

Drinks, alcohol-free

- Mineral Water (sparkling and still)
- Coca Cola
- Lemonade (orange and lemon)
- Apfelschorle (sparkling apple juice)
- Wolters (local beer brewed in Braunschweig)
- Radler (beer with lemonade)
- Weizen (wheat beer)

Beer (also available as a mixture with lemonade)

- Gose (light and dark)
- Rammelsberger Pils
- Beer of the season

Proceedings

As usual for ILAS meetings, the proceedings will appear as a volume of Linear Algebra and its Applications. Editors for the volume are:

- Ravi Bapat
- Matthias Bollhöfer
- Froilán M. Dopico
- Heike Faßbender

The contact details of the editors will be announced after the conference.

All papers will be subject to the usual refereeing procedure for Linear Algebra and its Applications.

The deadline for submissions is December 31, 2011.

Book Exhibits

Monday, August 22 (Part I)

08:30 - 09:00 **Opening Remarks**
Room: SN19.1

09:00 - 10:00 **Plenary Lecture I**
Room: SN19.1 **Rajesh Pereira (University of Guelph)**
Matrix Methods in Analytic Theory of Polynomials
Chair: Froilán M. Dopico

10:00 - 10:30 *Coffee Break*
Pavilion

10:30 - 12:30 **Minisymposia I**

MS1.1 Tensor Decompositions, Part I
Chairs: Lars Grasedyck and Eugene Tyrtyshnikov

MS3.1 Total positivity: recent Advances in Theory and Applications, Part I
Chair: Plamen Koev

MS5.1 Quasi- and Semiseparable matrices, Part I
Chair: Pavel Zhlobich

	MS1.1	MS3.1	MS5.1
Time	Room: SN19.2	Room: PK4.3	Room: SN19.3
10:30 - 11:00	Tobler	Johnson	Gemignani
11:00 - 11:30	Ballani	Cantó	Boito
11:30 - 12:00	Kluge	Peña	Vandebril
12:00 - 12:30	Holtz	Kushel	—

12:30 - 14:00 *Lunch Break*

14:00 - 15:00 **Plenary Lecture II: NICONET speaker**
Room: SN19.1 **Zlatko Drmač (University of Zagreb)**
Accurate and stable numerical linear algebra in control
Chair: Peter Benner

15:00 - 15:30 *Coffee Break*
Pavilion

Monday, August 22 (Part II)

15:30 - 16:50 **Contributed Sessions I**

CS1.1 Numerical Methods for Linear Systems, Part I
Chair: Miroslav Rozložník

CS4.1 Matrix Functions and Equations, Part I
Chair: Shinya Miyajima

CS7.1 Structured Matrices, Part I
Chair: Thomas Mach

CS9 Stochastics
Chair: Miriam Farber

CS13.1 Control, Part I
Chair: Christian Schröder

	CS1.1	CS4.1	CS7.1	CS9	CS13.1
Time	Room: PK4.3	Room: SN19.2	Room: SN19.4	Room: SN19.1	Room: SN19.3
15:30 - 15:50	Bolten	Verde-Star	Gimenez	Niekamp	Hana
15:50 - 16:10	Notay	Ziętak	Katsouleas	Rosić	Paprotny
16:10 - 16:30	Basermann	Chu	Iannazzo	Dahl	Ran
16:30 - 16:50	Stoll	Dopico	—	Schlote	Roca

16:50 - 17:00 *Short Break*

17:00 - 18:40 **Contributed Sessions II**

CS1.2 Numerical Methods for Linear Systems, Part II
Chair: Jörg Liesen

CS4.2 Matrix Functions and Equations, Part II
Chair: Antonio Cosmin Ionita

CS10.1 Graph Theory, Part I
Chair: Bit-Shun Tam

CS14 Inequalities and Upper Bounds
Chair: Ann-Kristin Baum

CS17.1 Algebraic Structures and Matrix Theory, Part I
Chair: Maria Manuel Torres

	CS1.2	CS4.2	CS10.1	CS14	CS17.1
Time	Room: PK4.3	Room: SN19.2	Room: SN19.1	Room: SN19.3	Room: SN19.4
17:00 - 17:20	Rozložník	Miyajima	Farber	Furuichi	Calderon
17:20 - 17:40	Tuma	Truhar	Chebotarev	Leal-Duarte	Canogar
17:40 - 18:00	Wei	Plešinger	Qiao	Yamazaki	Quinlan
18:00 - 18:20	Barlow	—	Zhang	Tao	Cicone
18:20 - 18:40	Ceballos	—	Shaked-Monderer	Lins	Guterman

19:00 - 21:00 **Reception at the Old Town Hall (Dornse)**
(for details see page 9)

Tuesday, August 23 (Part I)

09:00 - 10:00 **Plenary Lecture III: GAMM speaker**
Room: SN19.1 **Melina Freitag (University of Bath)**
Tikhonov Regularization for Large Scale Inverse Problems
Chair: Volker Mehrmann

10:00 - 10:30 *Coffee Break*
Pavilion

10:30 - 12:30 **Young Researchers' Minisymposia I**

YR2 The theory of orbits in numerical linear algebra and control theory
Chairs: Fernando de Terán and Marta Peña

YR3 Combinatorial Matrix Theory
Chairs: Minerva Catral and Amy Wangsness Wehe

YR4 Numerical methods for the solution of algebraic Riccati equations
Chairs: Frederico Poloni and Timo Reis

YR7.1 Max-plus linearity and its applications in computer science and scheduling, Part I
Chair: Sergeĭ Sergeev

	YR2	YR3	YR4	YR7.1
Time	Room: SN19.4	Room: SN19.2	Room: PK4.3	Room: SN19.3
10:30 - 11:00	Johansson	Erickson	Saak	Goverde
11:00 - 11:30	De Terán	Young	Mena	Allamigeon
11:30 - 12:00	Peña	Catral	Breiten	Sharify
12:00 - 12:30	Ortiz	Wangsness Wehe	Jungers	Peperko

12:30 - 14:00 *Lunch Break*

14:00 - 15:00 **Plenary Lecture IV: SIAM speaker**
Room: SN19.1 **Michiel Hochstenbach (TU Eindhoven)**
Recent progress in the solution of discrete ill-posed problems
Chair: Zdenek Strakos

15:00 - 15:30 *Coffee Break*
Pavilion

Tuesday, August 23 (Part II)

15:30 - 16:50 **Contributed Sessions III**

CS1.3 Numerical Methods for Linear Systems, Part III
Chair: Elias Jarlebring

CS6.1 Generalized Inverses, Part I
Chair: K.C. Sivakumar

CS7.2 Structured Matrices, Part II
Chair: Marc Van Barel

CS10.2 Graph Theory, Part II
Chair: Michael Karow

CS12 Nonnegative Matrices
Chair: Kim Hana

	CS1.3	CS6.1	CS7.2	CS10.2	CS12
Time	Room: PK4.3	Room: SN19.2	Room: SN19.4	Room: SN19.3	Room: SN19.1
15:30 - 15:50	Strakoš	Jeffryes	Grasedyck	Tam	Aretaki
15:50 - 16:10	Fujino	Shi	Mach	Bašić	Voynov
16:10 - 16:30	Liesen	Petković	Vannieuwenhoven	Goldberg	Peperko
16:30 - 16:50	Zemke	Stahl	Miladinovic	Ernst	Protasov

16:50 - 17:00 *Short Break*

17:00 - 18:40 **Contributed Sessions IV**

CS2.1 Numerical Methods for Eigenvalue Problems, Part I
Chair: Bor Plestenjak

CS13.2 Control, Part II
Chair: Jan Homeyer

CS15 Differential and Difference Equations
Chair: Ravindra B Bapat

CS16 Information Theory and Misc
Chair: Antonio J. Calderon Martin

CS17.2 Algebraic Structures and Matrix Theory, Part II
Chair: Bryan L. Shader

	CS2.1	CS13.2	CS15	CS16	CS17.2
Time	Room: PK4.3	Room: SN19.1	Room: SN19.2	Room: SN19.3	Room: SN19.4
17:00 - 17:20	Zhou	Schröder	Baum	Klein	Torres
17:20 - 17:40	Jarlebring	Wang	Dassios	Massey	Ruiz
17:40 - 18:00	Vlieger	García-Planas	Oluoch	Gaaya	Šemrl
18:00 - 18:20	Watkins	López-Cabeceira	—	—	Šivic
18:20 - 18:40	Diao	Voigt	—	—	Thome

Wednesday, August 24

09:00 - 10:00 **Plenary Lecture V**
Room: SN19.1 **Joseph M. Landsberg (Texas A&M University)**
Multilinear algebra and geometry
Chair: Stephen Kirkland

10:00 - 10:30 *Coffee Break*
Pavilion

10:30 - 12:30 **Young Researchers' Minisymposia II**

YR1 Modern methods for PDE eigenvalue problems
Chairs: Joscha Gedicke and Agnieszka Miedlar

YR5 Matrix Means: Theory and Computation
Chairs: Bruno Iannazzo and Miklos Palfia

YR6 Parallel Computing in Numerical Linear Algebra
Chairs: Jens Saak and Alfredo Remon

YR7.2 Max-plus linearity and its applications in computer science and scheduling, Part II
Chair: Rob M.P. Goverde

	YR1	YR5	YR6	YR7.2
Time	Room: PK4.3	Room: SN19.2	Room: SN19.4	Room: SN19.3
10:30 - 10:50	Effenberger	Jeuris	Köhler	Benek Gursoy
10:50 - 11:10	Gedicke	Pálfia	Martín	Johnson
11:10 - 11:30	Giani	Lee	Göddeke	Farhi
11:30 - 11:50	Janssen	Rentmeesters	Petschow	Rashid
11:50 - 12:10	Löchel	Poloni	—	Tomášková
12:10 - 12:30	Miedlar	Kim	—	Hook

13:30 **Exkursion & Conference Dinner**
(for details see page 10)

Thursday, August 25 (Part I)

09:00 - 10:00 **Plenary Lecture VI: LAMA speaker**
Room: SN19.1 **Roland Hildebrand (Université Grenoble 1)**
Linear group representations in the service of conic optimization
Chair: Tobias Damm

10:00 - 10:30 *Coffee Break*
Pavilion

10:30 - 12:30 **Minisymposia II**

MS3.2 Total positivity: recent advances in theory and applications, Part II
Chair: Juan Manuel Peña

MS4.1 Matrix Polynomials and their Eigenproblems, Part I
Chair: Ion Zaballa

MS5.2 Quasi- and Semiseparable Matrices, Part II
Chair: Raf Vandebril

MS6.1 Compressed Sensing and Sparse Approximation Algorithms, Part I
Chair: Gitta Kutyniok

	MS3.2	MS4.1	MS5.2	MS6.1
Time	Room: SN19.4	Room: SN19.2	Room: SN19.3	Room: PK4.3
10:30 - 11:00	Martínez	Mehrmann	Del Corso	Rauhut
11:00 - 11:30	Barreras	Mackey	Humet	Iwen
11:30 - 12:00	Koev	Noferini	Zhlobich	Wright
12:00 - 12:30	—	Meerbergen	Van Barel	Lemvig

12:30 - 14:00 *Lunch Break*

14:00 - 15:00 **ILAS Business Meeting**
Room: PK4.3

15:00 - 15:30 *Coffee Break*
Pavilion

Thursday, August 25 (Part II)

15:30 - 17:30 **Minisymposia III**

MS2 Minisymposium in honor of Miroslav Fiedler
Chairs: Richard Brualdi and Hans Schneider

	MS2
Time	Room: PK4.3
15:30 - 16:00	Mackey
16:00 - 16:30	Nikiforov
16:30 - 17:00	Sergeev
17:00 - 17:30	Stuart

17:30 - 17:40 *Short Break*

17:40 - 19:00 **Contributed Sessions V**

CS2.2 Numerical Methods for Eigenvalue Problems, Part II
Chair: Johan A. Ceballos

CS5 Model and Dimension Reduction
Chair: Benjamin Jeffryes

CS6.2 Generalized Inverses, Part II
Chair: Marko D. Petković

CS13.3 Control, Part III
Chair: Luis Verde-Star

CS17.3 Algebraic Structures and Matrix Theory, Part III
Chair: Chi-Kwong Li

	CS2.2	CS5	CS6.2	CS13.3	CS17.3
Time	Room: PK4.3	Room: SN19.3	Room: SN19.2	Room: SN19.1	Room: SN19.4
17:40 - 18:00	Plestenjak	Ionita	Sivakumar	Homeyer	Shader
18:00 - 18:20	Muhič	Schneider	Baksalary	Mehrmann	van den Driessche
18:20 - 18:40	Chang	Kürschner	Trenkler	Bru	Savchenko
18:40 - 19:00	Mas	Hnětynková	Seri	—	Böttcher

Friday, August 26 (Part I)

09:00 - 10:00 **Plenary Lecture VII**
Room: SN19.1 **Diederich Hinrichsen (Universität Bremen)**
Interconnected systems with uncertain couplings:
stability radii and sharp inclusion theorems
Chair: Angelika Bunse-Gerstner

10:00 - 10:30 *Coffee Break*
Pavilion

10:30 - 12:30 **Minisymposia IV**

MS1.2 Tensor Decomposition and Approximation, Part II
Chairs: Lars Grasedyck and Eugene Tyrtyshnikov

MS4.2 Matrix Polynomials and their Eigenproblems, Part II
Chair: Françoise Tisseur

MS6.2 Compressed Sensing and Sparse Approximation Algorithms, Part II
Chair: Holger Rauhut

	MS1.2	MS4.2	MS6.2
Time	Room: SN19.3	Room: SN19.2	Room: PK4.3
10:30 - 11:00	Oseledets	Karkanias	Kutyniok
11:00 - 11:30	Dolgov	De Terán	Pfander
11:30 - 12:00	Sorber	Vologiannidis	Jokar
12:00 - 12:30	Domanov	Zaballa	Krahmer

12:30 - 14:00 *Lunch Break*

14:00 - 15:00 **Plenary Lecture VIII**
Room: SN19.1 **Daniel Potts (Chemnitz University of Technology)**
Parameter Estimation for Exponential Sums
Chair: Dario Bini

15:00 - 15:30 *Coffee Break*
Pavilion

Friday, August 26 (Part II)

15:30 - 17:10 **Contributed Sessions VI**

CS3 Singular Values and Least Squares (cancelled)
Chair: Matthias Voigt

CS8 Matrix Polynomials and Products
Chair: Rainer Niekamp

CS11 Spectral Analysis and Sensitivity
Chair: Aikaterini Aretaki

CS17.4 Algebraic Structures and Matrix Theory, Part IV
Chair: Matthias Bolten

	CS8	**CS11**	**CS17.4**
Time	Room: PK4.3	Room: SN19.2	Room: SN19.4
15:30 - 15:50	Batra	Ferreira	Li
15:50 - 16:10	Bueno	Karow	Wilson
16:10 - 16:30	Kressner	Nakatsukasa	Agaev
16:30 - 16:50	Franchi	Tarragona	Lemmens
16:50 - 17:10	Pérez-Álvaro	Mehl	Molnár

17:10 **Closing**

Overview: ILAS 2011 - Part I

	Monday, 22.08.2011	Tuesday, 23.08.2011	Wednesday, 24.08.2011	Thursday, 25.08.2011	Friday, 26.08.2011
08:30 – 09:00	Opening Remarks *(SN19.1)*				
09:00 – 10:00	**Plenary Lecture I** *(SN19.1)* Rajesh Pereira	**Plenary Lecture III** *(SN19.1)* Melina Freitag (GAMM speaker)	**Plenary Lecture V** *(SN19.1)* Joseph Landsberg	**Plenary Lecture VI** *(SN19.1)* Roland Hildebrand (LAMA speaker)	**Plenary Lecture VII** *(SN19.1)* Diederich Hinrichsen
10:00 – 10:30	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break
10:30 – 12:30	**Minisymposia I** MS3.1 *(PK4.3)* Total positivity: Recent Advances in Theory and Applications, Part I MS1.1 *(SN19.2)* Tensor Decompositions, Part I MS5.1 *(SN19.3)* Quasi- and Semi-separable matrices, Part I	**Young Researchers' Minisymposia I** YR4 *(PK4.3)* Numerical Methods for the Solution of Algebraic Riccati Equations YR3 *(SN19.2)* Combinatorial Matrix Theory YR7.1 *(SN19.3)* Max-Plus, Part I YR2 *(SN19.4)* The Theory of Orbits in Numerical Linear Algebra and Control Theory	**Young Researchers' Minisymposia II** YR1 *(PK4.3)* Modern Methods for PDE Eigen-value Problems YR5 *(SN19.2)* Matrix Means: Theory and Computation YR7.2 *(SN19.3)* Max-Plus, Part II YR6 *(SN19.4)* Parallel Computing in Numerical Linear Algebra	**Minisymposia II** MS6.1 *(PK4.3)* Compressed Sensing and Sparse Approxi-mation Algorithms, Part I MS4.1 *(SN19.2)* Matrix Polynomials and Their Eigen-problems, Part I MS5.2 *(SN19.3)* Quasi- and Semi-separable matrices, Part II MS3.2 *(SN19.4)* Total positivity: recent Advances in Theory and Applications, Part II	**Minisymposia IV** MS6.2 *(PK4.3)* Compressed Sensing and Sparse Approxi-mation Algorithms, Part II MS4.2 *(SN19.2)* Matrix Polynomials and Their Eigen-problems, Part II MS1.2 *(SN19.3)* Tensor Decompositions, Part II
12:30 – 14:00	Lunch Break	Lunch Break	EXCURSION [Time: 13:30 onwards]	Lunch Break	Lunch Break
14:00 – 15:00	**Plenary Lecture II** *(SN19.1)* Zlatko Drmac (NICONET speaker)	**Plenary Lecture IV** *(SN19.1)* Michiel Hochstenbach (SIAM speaker)		**ILAS Business Meeting** *(PK4.3)*	**Plenary Lecture VIII** *(SN19.1)* Daniel Potts
15:00 – 15:30	Coffee Break	Coffee Break		Coffee Break	Coffee Break

Overview: ILAS 2011 - Part II

	Monday, 22.08.2011	Tuesday, 23.08.2011	Wednesday, 24.08.2011	Thursday, 25.08.2011	Friday, 26.08.2011
15:30 – 16:50	**Contributed Sessions I** CS1.1 *(PK4.3)* Num. Methods for Linear Systems, Part I CS4.1 *(SN19.2)* Matrix Functions and Equations, Part I CS13.1 *(SN19.3)* Control, Part I CS7.1 *(SN19.4)* Structured Matrices, Part I CS9 *(SN19.1)* Stochastics and Misc	**Contributed Sessions III** CS1.3 *(PK4.3)* Num. Methods for Linear Systems, Part III CS6.1 *(SN19.2)* Generalized Inverses, Part I CS10.2 *(SN19.3)* Graph Theory, Part II CS7.2 *(SN19.4)* Structured Matrices, Part II CS12 *(SN19.1)* Nonnegative Matrices	E X C U R S I O N	**Minisymposia III** [Time: 15:30 – 17:30] MS2 *(PK4.3)* Minisymposium in honor of Miroslav Fiedler	**Contributed Sessions VI** CS8 *(PK4.3)* Matrix Polynomials and Products CS11 *(SN19.2)* Spectral Analysis and Sensitivity ~~CS3 *(SN19.3)* Singular Values and Least Squares~~ CS17.4 *(SN19.4)* Algebraic Structures and Matrix Theory, Part IV
16:50 – 17:00	Short Break	Short Break		Short Break	**Closing at approx. 17:10**
17:00 – 18:40	**Contributed Sessions II** CS1.2 *(PK4.3)* Num. Methods for Linear Systems, Part II CS4.2 *(SN19.2)* Matrix Functions and Equations, Part II CS14 *(SN19.3)* Inequalities and Upper Bounds CS17.1 *(SN19.4)* Algebraic Structures and Matrix Theory, Part I CS10.1 *(SN19.1)* Graph Theory, Part I	**Contributed Sessions IV** CS2.1 *(PK4.3)* Num. Methods for Eigenvalue Problems, Part I CS15 *(SN19.2)* Differential and Difference Equations CS16 *(SN19.3)* Information Theory and Misc CS17.2 *(SN19.4)* Algebraic Structures and Matrix Theory, Part II CS13.2 *(SN19.1)* Control, Part II		**Contributed Sessions V** [Time: 17:40 – 18:40] CS2.2 *(PK4.3)* Num. Methods for Eigenvalue Problems, Part II CS6.2 *(SN19.2)* Generalized Inverses, Part II CS5 *(SN19.3)* Model and Dimension Reduction CS17.3 *(SN19.4)* Algebraic Structures and Matrix Theory, Part III CS13.3 *(SN19.1)* Control, Part III	
Sunday, 21.08.2011 Welcome Reception [Time: 17:00 – 19:00]	Reception at Old Town Hall (Dornse) [Time: 19:00 – 21:00]	Raft Tour on the Oker River (*) [Time: 18:00 – 20:00]	Conference Dinner [Time: 19:00 onwards]	Guided City Tour with Hugo as C. F. Gauß (*) [Time: 18:00 – 20:00 Uhr]	

(*) by registration only, not included in registration fee

MS1

MS1.1: Tensor Decomposition and Approximation, Part I		
Monday, 22.08.2011	Chairs: Lars Grasedyck and Eugene Tyrtyshnikov	**Room: SN19.2**
10:30 - 11:00	**Christine Tobler** *A MATLAB toolbox for tensors in hierarchical Tucker format*	
11:00 - 11:30	**Jonas Ballani** *Black Box Approximation of High-Dimensional Functions in Hierarchical Tucker Format*	
11:30 - 12:00	**Melanie Kluge** *Tensor Completion in Hierarchical Tucker Format*	
12:00 - 12:30	**Sebastian Holtz** *Direct optimization algorithm and convergence*	

- end of session -

MS1.2: Tensor Decomposition and Approximation, Part II		
Friday, 26.08.2011	Chairs: Lars Grasedyck and Eugene Tyrtyshnikov	**Room: SN19.3**
10:30 - 11:00	**Ivan Oseledets** *Multiparametric model reduction using tensor train decomposition*	
11:00 - 11:30	**Sergey Dolgov** *A gray-box DMRG algorithm for tensor structured solution to linear systems*	
11:30 - 12:00	**Laurent Sorber** *Optimization-based algorithms for the rank–$(L_t, L_t, 1)$ Block Term Decomposition and related decompositions*	
12:00 - 12:30	**Ignat Domanov** *On the uniqueness of the Canonical Polyadic Decomposition and the link with generalized Schur and Oppenheim inequalities*	

- end of session -

MS2

MS2: Minisymposium in Honor of Miroslav Fiedler		
Thursday, 25.08.2011	Chairs: Richard Brualdi and Hans Schneider	**Room: PK4.3**
15:30 - 16:00	**D. Steven Mackey** *M. Fiedler's work on companion-like matrices and its influence on later developments and applications*	
16:00 - 16:30	**Vladimir Nikiforov** *The influence of Miroslav Fiedler's work on Spectral Graph Theory*	
16:30 - 17:00	**Sergeĭ Sergeev** *Fiedler-Pták scaling in max algebra*	
17:00 - 17:30	**Jeffrey Stuart** *Highlights of Miroslav Fiedler's Work With Special Matrices*	

- end of session -

MS3

MS3.1: Total Positivity: Recent Advances in Theory and Applications, Part I		
Monday, 22.08.2011	Chair: Plamen Koev	**Room: PK4.3**
10:30 - 11:00	**Charles Johnson** *The Distribution of Rank in the Submatrices of a TN Matrix*	
11:00 - 11:30	**Rafael Cantó** *Characterizations of totally positive and totally negative rectangular matrices*	
11:30 - 12:00	**Juan Manuel Peña** *Computations with matrices with special bidiagonal factorizations*	
12:00 - 12:30	**Olga Kushel** *On conic sets, invariant for matrices with real spectrum*	

- end of session -

MS3.2: Total Positivity: Recent Advances in Theory and Applications, Part II		
Thursday, 25.08.2011	Chair: Juan Manuel Peña	**Room: SN19.4**
10:30 - 11:00	**José-Javier Martínez** *Accurate bidiagonal factorization of certain classes of totally positive matrices*	
11:00 - 11:30	**Alvaro Barreras** *Jacobi sign regular matrices*	
11:30 - 12:00	**Plamen Koev** *Computing Jordan Blocks of Irreducible Totally Nonnegative Matrices*	

- end of session -

MS4

MS4.1: Matrix Polynomials and Their Eigenproblems, Part I		
Thursday, 25.08.2011	Chair: Ion Zaballa	**Room: SN19.2**
10:30 - 11:00	**Volker Mehrmann** *Skew-symmetric matrix polynomials and their application*	
11:00 - 11:30	**D. Steven Mackey** *The Elementary Divisor Structure of Quadratic Matrix Polynomials*	
11:30 - 12:00	**Vanni Noferini**[a] *Solving structured PEPs by means of the Ehrlich-Aberth method*	
12:00 - 12:30	**Karl Meerbergen** *The solution of a nonlinear eigenvalue problem using polynomial eigenvalue solvers*	

- end of session -

MS4.2: Matrix Polynomials and Their Eigenproblems, Part II		
Friday, 26.08.2011	Chair: Françoise Tisseur	**Room: SN19.2**
10:30 - 11:00	**Nicos Karkanias** *Polynomial Matrices, Approximate GCD and Control Theory*	
11:00 - 11:30	**Fernando De Terán** *Fiedler linearizations of matrix polynomials*	
11:30 - 12:00	**Stavros Vologiannidis** *Extended Fiedler linearizations and eigenvector recovery*	
12:00 - 12:30	**Ion Zaballa** *Eigenstructure of Real Symmetric Quadratic Matrix Polynomials*	

- end of session -

[a]Not printed in the "Book of Abstracts". This speaker is replacing Sk Safique Ahmad.

MS5

MS5.1: Quasi- and Semiseparable Matrices, Part I		
Monday, 22.08.2011	Chair: Pavel Zhlobich	**Room: SN19.3**
10:30 - 11:00	**Luca Gemignani** *On the use of functional iteration methods for solving generalized eigenproblems*	
11:00 - 11:30	**Paola Boito** *Fast eigenvalue computation based on structured implicit QR with compression*	
11:30 - 12:00	**Raf Vandebril** *Chasing bulges or rotations? A new family of matrices admitting linear time QR-steps*	

- end of session -

MS5.2: Quasi- and Semiseparable Matrices, Part II		
Thursday, 25.08.2011	Chair: Raf Vandebril	**Room: SN19.3**
10:30 - 11:00	**Gianna M. Del Corso** *An extension of the Faber Manteuffel Theorem*	
11:00 - 11:30	**Matthias Humet** *Algorithms to compute spectral transformations for orthogonal polynomials on the unit circle*	
11:30 - 12:00	**Pavel Zhlobich** *Stability of QR-based system solvers for a subclass of Quasiseparable Order One matrices*	
12:00 - 12:30	**Marc Van Barel** *Orthogonal functions and matrix computations*	

- end of session -

MS6

MS6.1: Compressed Sensing and Sparse Approximation Algorithms, Part I		
Thursday, 25.08.2011	Chair: Gitta Kutyniok	**Room: PK4.3**
10:30 - 11:00	**Holger Rauhut** *Compressive Sensing and Structured Random Matrices*	
11:00 - 11:30	**Mark A. Iwen** *Compressed Sensing for Manifold Data*	
11:30 - 12:00	**John Wright** *Local Correctness of Dictionary Learning Algorithms*	
12:00 - 12:30	**Jakob Lemvig** *Sparse Dual Frames*	

- end of session -

MS6.2: Compressed Sensing and Sparse Approximation Algorithms, Part II		
Friday, 26.08.2011	Chair: Holger Rauhut	**Room: PK4.3**
10:30 - 11:00	**Gitta Kutyniok** *Separation of Data by Sparse Approximations*	
11:00 - 11:30	**Götz E. Pfander** *From the Bourgain Tzafriri Restricted Invertibility Theorem to restricted isometries*	
11:30 - 12:00	**Sadegh Jokar** *Compressed Sensing and Sparse Solution of PDEs*	
12:00 - 12:30	**Felix Krahmer** *New and Improved Johnson-Lindenstrauss Embeddings via the Restricted Isometry Property*	

- end of session -

YR1 and YR2

YR1: Modern Methods for PDE Eigenvalue Problems		
Wednesday, 24.08.2011	Chairs: Joscha Gedicke and Agnieszka Miedlar	**Room: PK4.3**
10:30 - 10:50	**Cedric Effenberger** *Projection methods for a class of nonlinear PDE eigenvalue problems*	
10:50 - 11:10	**Joscha Gedicke** *An Optimal Eigenvalue Solver*	
11:10 - 11:30	**Stefano Giani** *Goal-oriented hp-Adaptive Discontinuous Galerkin Finite Element Methods for Elliptic Eigenvalue Problems*	
11:30 - 11:50	**Bärbel Janssen** *Solution of large-scale PDE-eigenvalue problems*	
11:50 - 12:10	**Dominik Löchel** *A multilevel Jacobi-Davidson method for parameter dependent PDE eigenvalue problems*	
12:10 - 12:30	**Agnieszka Miedlar** *Inexact Adaptive Finite Element computations of PDE eigenvalue problems*	

- end of session -

YR2: The Theory of Orbits in Numerical Linear Algebra and Control Theory		
Tuesday, 23.08.2011	Chairs: Fernando de Terán and Marta Peña	**Room: SN19.4**
10:30 - 11:00	**Stefan Johansson** *The closure hierarchy of full rank polynomial matrices*	
11:00 - 11:30	**Fernando De Terán** *The solution of the equation $XA + AX^T = 0$ and its application to the theory of orbits*	
11:30 - 12:00	**Marta Peña** *Orbit stratification of non-controllable bimodal systems*	
12:00 - 12:30	**Carmen Ortiz** *Geometric structure of the orbits of a controllable pair*	

- end of session -

YR3 and YR4

YR3: Combinatorial Matrix Theory		
Tuesday, 23.08.2011	Chairs: Minerva Catral and Amy Wangsness Wehe	**Room: SN19.2**
10:30 - 11:00	**Craig Erickson** *Potentially eventually positive and potentially eventually exponentially positive sign patterns*	
11:00 - 11:30	**Michael Young** *Zero Forcing Sets with Applications*	
11:30 - 12:00	**Minerva Catral** *Drazin and Group Inverses of Matrices with Certain Bipartite Digraphs*	
12:00 - 12:30	**Amy Wangsness Wehe** *Discussions on when $mr^-(G) = MR^-(G)$ in Skew Symmetric Matrices*	

- end of session -

YR4: Numerical Methods for the Solution of Algebraic Riccati Equations		
Tuesday, 23.08.2011	Chairs: Frederico Poloni and Timo Reis	**Room: PK4.3**
10:30 - 11:00	**Jens Saak** *Acceleration of Newton-based Methods for Solving Large Sparse Algebraic Riccati Equations*	
11:00 - 11:30	**Hermann Mena** *On the Numerical Solution of Large Scale Differential Riccati Equations*	
11:30 - 12:00	**Tobias Breiten** *Solving Large-Scale Riccati Equations Arising in Stochastic Control*	
12:00 - 12:30	**Marc Jungers** *Feedback Stackelberg Strategy for Discrete-Time Descriptor Games*	

- end of session -

YR5 and YR6

YR5: Matrix Means: Theory and Computation		
Wednesday, 24.08.2011	Chairs: Bruno Iannazzo and Miklos Palfia	**Room: SN19.2**
10:30 - 10:50	**Ben Jeuris** *The matrix geometric mean and manifold optimization*	
10:50 - 11:10	**Miklós Pálfia** *Affine means on differentiable manifolds*	
11:10 - 11:30	**Hosoo Lee** *Higher genius Gauss and Borchardt means on Nonpositively curved normal cones*	
11:30 - 11:50	**Quentin Rentmeesters** *Comparison of gradient and Newton methods for Karcher mean computation of rotation matrices and symmetric positive definite matrices*	
11:50 - 12:10	**Federico Poloni** *Constructing new matrix geometric means (or the impossibility thereof)*	
12:10 - 12:30	**Sejong Kim** *Weighted Means on Smooth Manifold with Spray*	

- end of session -

YR6: Parallel Computing in Numerical Linear Algebra		
Wednesday, 24.08.2011	Chairs: Jens Saak and Alfredo Remon	**Room: SN19.4**
10:30 - 11:00	**Martin Köhler** *Solving large scale matrix equations on multicore-CPUs*	
11:00 - 11:30	**Alberto F. Martín** *Exploiting Thread-Level Parallelism in the Multilevel ILU Preconditioning of Large Sparse Linear Systems*	
11:30 - 12:00	**Dominik Göddeke** *Mixed-Precision GPU-Multigrid Solvers with Strong Smoothers*	
12:00 - 12:30	**Matthias Petschow** *The symmetric tridiagonal eigenproblem on massively-parallel supercomputers*	

- end of session -

YR7

YR7.1: Max-Plus Linearity and its Applications in Computer Science and Scheduling, Part I		
Tuesday, 23.08.2011	Chair: Sergeĭ Sergeev	**Room: SN19.3**
10:30 - 11:00	**Rob M.P. Goverde** *Sparse matrix computations in max-plus algebra and its application to large-scale railway timetable analysis*	
11:00 - 11:30	**Xavier Allamigeon** *Algorithmics of tropical polyhedra, and application to software verification*	
11:30 - 12:00	**Meisam Sharify** *Scaling of matrix polynomials by means of tropical algebra*	
12:00 - 12:30	**Aljosa Peperko** *Spectral radius in tropical algebra*	

- end of session -

YR7.2: Max-Plus Linearity and its Applications in Computer Science and Scheduling, Part II		
Wednesday, 24.08.2011	Chair: Rob M.P. Goverde	**Room: SN19.3**
10:30 - 10:50	**Buket Benek Gursoy** $P^{1}_{\max}$ *and* $S_{\max}$ *properties and asymptotic stability in the tropical linear algebra*	
10:50 - 11:10	**Marianne Johnson** *Green's* $\mathcal{J}$*-order and the rank of max-plus matrices*	
11:10 - 11:30	**Nadir Farhi** *A network calculus approach for the calculus of performance bounds in SpaceWire-like routers*	
11:30 - 11:50	**Imran Rashid** *Eigenspace structure of max-t fuzzy matrices*	
11:50 - 12:10	**Hana Tomášková** *Inverse eigenproblem in max-min algebra*	
12:10 - 12:30	**James Hook** *Products of i.i.d. componentwise exponential max-plus matrices*	

- end of session -

CS1

CS1.1: Numerical Methods for Linear Systems, Part I		
Monday, 22.08.2011	Chair: Miroslav Rozložník	**Room: PK4.3**
15:30 - 15:50	**Matthias Bolten** *Aggregation-based multigrid for circulant and Toeplitz matrices*	
15:50 - 16:10	**Yvan Notay** *Multigrid methods from the numerical linear algebra viewpoint*	
16:10 - 16:30	**Achim Basermann** *Scalable Preconditioned Solvers for Internal and External Flow Computations on Many-Core Systems*	
16:30 - 16:50	**Martin Stoll** *All-at-once solution of time-dependent PDE-constrained optimization problems*	

- end of session -

CS1.2: Numerical Methods for Linear Systems, Part II		
Monday, 22.08.2011	Chair: Jörg Liesen	**Room: PK4.3**
17:00 - 17:20	**Miroslav Rozložník** *Approximate inverse preconditioning and Gram-Schmidt orthogonalization*	
17:20 - 17:40	**Miroslav Tuma** *Mixed direct-inverse decompositions and applications*	
17:40 - 18:00	**Yimin Wei** *Convergence of General Nonstationary Iterative Methods for Solving Singular Linear Equations*	
18:00 - 18:20	**Jesse Barlow** *Block Gram–Schmidt Algorithms*	
18:20 - 18:40	**Johan A. Ceballos** *Accurate solution of the least squares problems via rank-revealing decomposition*	

- end of session -

CS1 (continued) and CS2

CS1.3: Numerical Methods for Linear Systems, Part III		
Tuesday, 23.08.2011	Chair: Elias Jarlebring	**Room: PK4.3**
15:30 - 15:50	**Zdeněk Strakoš** *On the continuous problem context of matrix computations in solving boundary value problems*	
15:50 - 16:10	**Seiji Fujino** *A proposal of Multi-Restarts type of Look-Back GMRES(k) methods*	
16:10 - 16:30	**Jörg Liesen** *On the convergence of GMRES for a convection-diffusion model problem*	
16:30 - 16:50	**Jens-Peter M. Zemke** *IDR: A new generation of Krylov subspace methods?*	

- end of session -

CS2.1: Numerical Methods for Eigenvalue Problems, Part I		
Tuesday, 23.08.2011	Chair: Bor Plestenjak	**Room: PK4.3**
17:00 - 17:20	**Ming Zhou** *Convergence analysis of gradient iterations for the Rayleigh quotient*	
17:20 - 17:40	**Elias Jarlebring** *Invariant pairs associated with the infinite Arnoldi method for nonlinear eigenvalue problems*	
17:40 - 18:00	**Jeroen De Vlieger** *A subspace projection method for maximizing the smallest eigenvalue of parameterized generalized eigenvalue problems*	
18:00 - 18:20	**David S. Watkins** *Generalizing Francis's implicitly-shifted QR algorithm: The never-ending saga*	
18:20 - 18:40	**Huaian Diao** *On Condition Numbers for Constrained Linear Least Squares Problems*	

- end of session -

CS2 (continued) and CS3

CS2.2: Numerical Methods for Eigenvalue Problems, Part II		
Thursday, 25.08.2011	Chair: Johan A. Ceballos	**Room: PK4.3**
17:40 - 18:00	**Bor Plestenjak** *Numerical methods for nonlinear two-parameter eigenvalue problems*	
18:00 - 18:20	**Andrej Muhič** *On a non-regular two-parameter eigenvalue problem*	
18:20 - 18:40	**Shu-Ming Chang** *Computational Methods in Multi-Component Bose-Einstein Condensates*	
18:40 - 19:00	**Jose Mas** *BIF preconditioner applied to least squares problems*	

- end of session -

CS3: Singular Values and Least Squares		
Friday, 26.08.2011	Chair: Matthias Voigt	**Room: SN19.3**

This session was cancelled.

CS4

CS4.1: Matrix Functions and Equations, Part I		
Monday, 22.08.2011	Chair: Shinya Miyajima	**Room: SN19.2**
15:30 - 15:50	**Luis Verde-Star** *Computation of the matrix exponential using the dynamic solution*	
15:50 - 16:10	**Krystyna Ziętak** *Properties of the Padé family of iterations for computing the matrix sign and sector functions*	
16:10 - 16:30	**Eric King-wah Chu** *Solving Large-Scale Algebraic Riccati Equations by Doubling*	
16:30 - 16:50	**Froilán M. Dopico** *Consistency and efficient solution of the Sylvester equation for congruence:* $AX + X^*B = C$	

- end of session -

CS4.2: Matrix Functions and Equations, Part II		
Monday, 22.08.2011	Chair: Antonio Cosmin Ionita	**Room: SN19.2**
17:00 - 17:20	**Shinya Miyajima** *Enclosing solutions in Sylvester equations*	
17:20 - 17:40	**Ninoslav Truhar** *Optimization of the solution of the Sylvester equation and applications*	
17:40 - 18:00	**Martin Plešinger** *Preconditioned Low-rank Krylov Subspace Solvers for Lyapunov Equations*	

- end of session -

CS5

CS5: Model and Dimension Reduction		
Thursday, 25.08.2011	Chair: Benjamin Jeffryes	**Room: SN19.3**
17:40 - 18:00	**Antonio Cosmin Ionita** *Model Order Reduction of Parametrized Systems*	
18:00 - 18:20	**André Schneider** *Balanced Truncation for Descriptor Systems with Many Terminals*	
18:20 - 18:40	**Patrick Kürschner** *Dominant pole computation of MIMO second order systems*	
18:40 - 19:00	**Iveta Hnětynková** *Stopping criteria for the LSQR method based on revealing the noise level in the data*	

- end of session -

CS6

CS6.1: Generalized Inverses, Part I		
Tuesday, 23.08.2011	Chair: K.C. Sivakumar	**Room: SN19.2**
15:30 - 15:50	**Benjamin Jeffryes** *A new approach to generalized inverses*	
15:50 - 16:10	**Xinghua Shi** *Convergence of Rump's Method for Computing Moore-Penrose Inverse*	
16:10 - 16:30	**Marko D. Petković** *Iterative method for computing Moore-Penrose inverse based on Penrose equations*	
16:30 - 16:50	**Dominik Stahl** *Superresolution using the lifting scheme and an adapted pseudoinverse*	

- end of session -

CS6.2: Generalized Inverses, Part II		
Thursday, 25.08.2011	Chair: Marko D. Petković	**Room: SN19.2**
17:40 - 18:00	**K.C. Sivakumar** *Generalized inverse positivity of interval matrices*	
18:00 - 18:20	**Oskar Maria Baksalary** *On the projectors* $\mathbf{A}\mathbf{A}^{\dagger}$ *and* $\mathbf{A}^{\dagger}\mathbf{A}$	
18:20 - 18:40	**Götz Trenkler** *On the matrix difference* $\mathbf{I} - \mathbf{A}$	
18:40 - 19:00	**Raffaello Seri** *Differentials of Eigenvalues and Eigenvectors under Nonstandard Normalizations with Applications to Search Engine Rankings*	

- end of session -

CS7

CS7.1: Structured Matrices, Part I

Monday, 22.08.2011 | Chair: Thomas Mach | **Room: SN19.4**

15:30 - 15:50	**Isabel Gimenez**	*Iterative determination of H-matrices and Irreducible Diagonal Blocks*
15:50 - 16:10	**Georgios Katsouleas**	*Links on Imbedding Conditions for normal matrices*
16:10 - 16:30	**Bruno Iannazzo**	*Computing means of structured matrices*

- end of session -

CS7.2: Structured Matrices, Part II

Tuesday, 23.08.2011 | Chair: Marc Van Barel | **Room: SN19.4**

15:30 - 15:50	**Lars Grasedyck**	*Hierarchical Tensor Methods for PDEs with Stochastic Parameters*
15:50 - 16:10	**Thomas Mach**	*Why the LR Cholesky algorithm does not work for hierarchical matrices*
16:10 - 16:30	**Nick Vannieuwenhoven**	*The sequentially truncated multilinear singular value decomposition for tensor*
16:30 - 16:50	**Marko Miladinovic**	*Modified SMS method for computing outer inverses of Toeplitz matrices*

- end of session -

CS8 and CS9

CS8: Matrix Polynomials and Products

Friday, 26.08.2011 | Chair: Rainer Niekamp | **Room: PK4.3**

15:30 - 15:50	**Prashant Batra**	*Maximum modulus estimates for generalized eigenvalues of matrix polynomials*
15:50 - 16:10	**Maria Isabel Bueno Cachadina**	*Recovery of eigenvectors of matrix polynomials from generalized Fielder linearizations.*
16:10 - 16:30	**Daniel Kressner**	*Codimensions and generic canonical forms for generalized matrix products*
16:30 - 16:50	**Massimo Franchi**	*Spectral analysis of square matrix polynomials by local rank factorization*
16:50 - 17:10	**Javier Pérez-Álvaro**	*Condition numbers of Fiedler Companion matrices*

- end of session -

CS9: Stochastics

Monday, 22.08.2011 | Chair: Miriam Farber | **Room: SN19.1**

15:30 - 15:50	**Rainer Niekamp**	*A Posteriori Adaptive Low-Rank Approximation of Probabilistic Models*
15:50 - 16:10	**Bojana V. Rosić**	*Bayesian Identification for non-Gaussian Parameters*
16:10 - 16:30	**Geir Dahl**	*Martingale matrix classes*
16:30 - 16:50	**Arieh Schlote**	*Linear Algebra Methods in the Study of Higher Moments of AIMD*

- end of session -

CS10

CS10.1: Graph Theory, Part I		
Monday, 22.08.2011	Chair: Bit-Shun Tam	**Room: SN19.1**
17:00 - 17:20	**Miriam Farber** *Upper bounds for the Laplacian eigenvalues of weighted and unweighted graphs*	
17:20 - 17:40	**Pavel Chebotarev** *Matrices that satisfy the graph bottleneck identity produce geodetic distances*	
17:40 - 18:00	**Sanzheng Qiao** *New Algorithms for Computing the Minkowski Reduced Lattice Bases*	
18:00 - 18:20	**Wen Zhang** *A Delayed Size-reduction Technique for Speeding Up the LLL Algorithm*	
18:20 - 18:40	**Naomi Shaked-Monderer** *Matrices Attaining the Minimum Semidefinite Rank of a Chordal Graph*	

- end of session -

CS10.2: Graph Theory, Part II		
Tuesday, 23.08.2011	Chair: Michael Karow	**Room: SN19.3**
15:30 - 15:50	**Bit-Shun Tam** *Graphs whose adjacency matrices have rank equal to the number of distinct nonzero rows*	
15:50 - 16:10	**Milan Bašić** *Which weighted circulant networks have perfect state transfer?*	
16:10 - 16:30	**Felix Goldberg** *Complete classification of optimal Colin de Verdière matrices of the graph $K_{4,4}$*	
16:30 - 16:50	**Thomas Ernst** *The Ward q-addition, a universal tool for q-calculus within linear algebra*	

- end of session -

CS11 and CS12

CS11: Spectral Analysis and Sensitivity		
Friday, 26.08.2011	Chair: Aikaterini Aretaki	**Room: SN19.2**
15:30 - 15:50	**Carla Ferreira** *Sensitivity of eigenvalues of an unsymmetric tridiagonal matrix*	
15:50 - 16:10	**Michael Karow** *A Perturbation Bound for Invariant Subspaces*	
16:10 - 16:30	**Yuji Nakatsukasa** *A Gerschgorin-type eigenvalue inclusion set for generalized eigenvalue problems*	
16:30 - 16:50	**Sonia Tarragona** *Perturbation analysis of simple eigenvalues and eigenvectors of singular linear systems*	
16:50 - 17:10	**Christian Mehl** *Generic rank one perturbation of complex Hamiltonian matrices*	

- end of session -

CS12: Nonnegative Matrices		
Tuesday, 23.08.2011	Chair: Kim Hana	**Room: SN19.1**
15:30 - 15:50	**Aikaterini Aretaki** *The higher rank numerical range of nonnegative matrices*	
15:50 - 16:10	**Andrey Voynov** *Strictly positive products of nonnegative matrices*	
16:10 - 16:30	**Aljosa Peperko** *On the functional inequality for the spectral radius of compact operators*	
16:30 - 16:50	**Vladimir Yu. Protasov** *Invariant functionals for the Lyapunov exponents of matrices*	

- end of session -

CS13

CS13.1: Control, Part I		
Monday, 22.08.2011	Chair: Christian Schröder	**Room: SN19.3**
15:30 - 15:50	**Kim Hana** *Algebraic properties of the companion matrices arising in a control system*	
15:50 - 16:10	**Alexander Paprotny** *Algebraic Multigrid Methods for Discrete Stochastic Optimal Control*	
16:10 - 16:30	**André Ran** *Controllability concepts for coordinated linear systems*	
16:30 - 16:50	**Alicia Roca** *On the pole placement problem for singular systems*	

- end of session -

CS13.2: Control, Part II		
Tuesday, 23.08.2011	Chair: Jan Homeyer	**Room: SN19.1**
17:00 - 17:20	**Christian Schröder** *Enforcing Dissipativity of LTI Systems through Structured Eigenvalue Theory*	
17:20 - 17:40	**Chern-Shuh Wang** *Sensitivity and Robustness of the State Feedback pole Assignment Problem*	
17:40 - 18:00	**M[a] Isabel García-Planas** *Solving Disturbance Decoupling For Singular Systems By P-D-Feedback And P-D-Output Injection*	
18:00 - 18:20	**M. Montserrat López-Cabeceira** *Right coprime factorization of rational matrices over commutative rings*	
18:20 - 18:40	**Matthias Voigt** *On Negative Imaginary Descriptor Systems*	

- end of session -

CS13 (continued) and CS14

CS13.3: Control, Part III		
Thursday, 25.08.2011	Chair: Luis Verde-Star	**Room: SN19.1**
17:40 - 18:00	**Jan Homeyer** *A Geometric Point of View on Gyroscopic Stabilization*	
18:00 - 18:20	**Volker Mehrmann** *Self-adjoint differential-algebraic operators and their use in optimal control*	
18:20 - 18:40	**Rafael Bru** *On applications of the Brauer theorem*	

- end of session -

CS14: Inequalities and Upper Bounds		
Monday, 22.08.2011	Chair: Ann-Kristin Baum	**Room: SN19.3**
17:00 - 17:20	**Shigeru Furuichi** *A matrix trace inequality and its applications to entropy theory*	
17:20 - 17:40	**Antonio Leal-Duarte** *Eigenvalue's interlacing inequalities in Matrix Theory*	
17:40 - 18:00	**Takeaki Yamazaki** *Riemannian mean and matrix inequalities*	
18:00 - 18:20	**Jiyuan Tao** *Some inequalities involving determinants, eigenvalues, and Schur complements in Euclidean Jordan algebras*	
18:20 - 18:40	**Brian Lins** *Upper bounds for order-preserving homogeneous maps on cones*	

- end of session -

CS15 and CS16

CS15: Differential and Difference Equations		
Tuesday, 23.08.2011	Chair: Ravindra B Bapat	**Room: SN19.2**
17:00 - 17:20	**Ann-Kristin Baum** *Positivity preserving discretizations of Differential-Algebraic-Equations*	
17:20 - 17:40	**Ioannis Dassios** *Robust Stability of Linear Matrix Difference Equations of Higher Order*	
17:40 - 18:00	**Nyamwala Fredrick Oluoch** *Spectral Analysis of Difference Operators With Almost Constant Coefficients*	
- end of session -		

CS16: Information Theory and Misc		
Tuesday, 23.08.2011	Chair: Antonio J. Calderon Martin	**Room: SN19.3**
17:00 - 17:20	**André Klein** *Statistical Distance Measures and the Fisher Information Matrix*	
17:20 - 17:40	**Pedro Massey** *Optimal reconstruction systems for erasures and for the q-potential*	
17:40 - 18:00	**Haykel Gaaya** *The numerical radius of the truncated shift and application to harmonic analysis*	
- end of session -		

CS17

CS17.1: Algebraic Structures and Matrix Theory, Part I		
Monday, 22.08.2011	Chair: Maria Manuel Torres	**Room: SN19.4**
17:00 - 17:20	**Antonio J. Calderon Martin** *On the structure of split Lie algebras and split Lie triple systems*	
17:20 - 17:40	**Roberto Canogar** *Matrix completion problems over integral domains: the case with a diagonal of prescribed blocks*	
17:40 - 18:00	**Rachel Quinlan** *Affine spaces of matrices with bounded rank, and a dual property*	
18:00 - 18:20	**Antonio Cicone** *Evaluating the Joint Spectral Radius*	
18:20 - 18:40	**Alexander Guterman** *Monotone transformations on matrix spaces*	
- end of session -		

CS17.2: Algebraic Structures and Matrix Theory, Part II		
Tuesday, 23.08.2011	Chair: Bryan L. Shader	**Room: SN19.4**
17:00 - 17:20	**Maria Manuel Torres** *Metric structure of critical orbital sets*	
17:20 - 17:40	**Mariano Ruiz** *Duality in reconstruction systems*	
17:40 - 18:00	**Peter Šemrl** *A localization technique for linear preservers*	
18:00 - 18:20	**Klemen Šivic** *Varieties of triples of commuting matrices*	
18:20 - 18:40	**Néstor Thome** *A matrix equation containing a periodic matrix*	
- end of session -		

CS17 (continued)

CS17.3: Algebraic Structures and Matrix Theory, Part III

Thursday, 25.08.2011 | Chair: Chi-Kwong Li | **Room: SN19.4**

17:40 - 18:00	**Bryan L. Shader** *Potentially Nilpotent and Spectrally Arbitrary Sign Patterns*	
18:00 - 18:20	**Pauline van den Driessche** *Sign Patterns that Require or Allow Particular Refined Inertias*	
18:20 - 18:40	**Sergey Savchenko** *The rate of convergence of the spectral radii of finite principal submatrices and the spectral properties of the original infinite irreducible matrix with non-negative entries*	
18:40 - 19:00	**Albrecht Böttcher** *The algebraic Riccati equation with Toeplitz matrices as coefficients*	

- end of session -

CS17.4: Algebraic Structures and Matrix Theory, Part IV

Friday, 26.08.2011 | Chair: Matthias Bolten | **Room: SN19.4**

15:30 - 15:50	**Chi-Kwong Li** *Linear algebra techniques in Quantum Information Science*	
15:50 - 16:10	**Ulrica Wilson** *Eventual Properties of Matrices*	
16:10 - 16:30	**Rafig Agaev** *A regularized limit of a decomposable stochastic matrix*	
16:30 - 16:50	**Bas Lemmens** *Continuity of the cone spectral radius*	
16:50 - 17:10	**Lajos Molnár** *Order automorphisms on positive definite operators and some applications*	

- end of session -

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