94TH





ANNUAL MEETING

of the International Association of Applied Mathematics and Mechanics

March 18th – 22nd, 2024 Magdeburg (Germany)

Preliminary Program









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March 18th - 22nd 2024 Magdeburg, Germany

Invitation

The International Association of Applied Mathematics and Mechanics (GAMM e.V.) cordially invites you to its 94th Annual Meeting from March 18th-22nd, 2024. On behalf of the DGLR and the GAMM we also invite you to the 66th Ludwig Prandtl memorial lecture.

About 1,000 mathematicians, engineers, and scientists from Germany, Europe, and the rest of the world will participate in this event.

The scientific program contains:

8 plenary lectures,

the Ludwig Prandtl memorial lecture,

the Richard von Mises lecture(s),

5 minisymposia,

5 young researchers minisymposia,

26 parallel sections with several hundred presentations,

a lecture of general public interest.

presentation of GAMM-related DFG programs, and

poster sessions.

We invite all GAMM members to the regular General Assembly of the GAMM on Wednesday, March 20th, 2024 at 11:30am.

Karsten Urban Michael Kaliske President Secretary

Venue

The GAMM Annual Meeting 2024 is hosted by the Otto-von-Guericke-Universität Magdeburg. On Monday, March 18th, the Conference will be opened in the lecture hall H1 in building G22 and via live broadcast in lecture hall H5 in building G16. All scientific events between Monday and Friday will take place on the central campus in the buildings G16, G22 and G26 within short walking distance.

The welcome reception and the conference dinner will take place at historic landmarks of Magdeburg and are located within a short walking distance or easily reachable by public transport.

Magdeburg is the capital of the German state Saxony-Anhalt and has a rich historical, industrial and scientific history. The city center with the cathedral, the mall along the river Elbe, numerous bars and restaurants and modern hotels is directly connected to the campus of the University by several tramlines.



Chairpersons

Peter Benner
Daniel Juhre
Thomas Richter
Elmar Woschke

Local organizing
committee

Holm Altenbach
Peter Benner
Rebecca Busch
Christian Daniel
Jan Heiland
Janine Holzmann
Daniel Juhre

Jens Saak Elmar Woschke

Thomas Richter
Madeleine Ruhbaum

Program committee

Thomas Antretter, Leoben Marek Behr, Aachen Peter Benner, Magdeburg Martin Burger, Erlangen Patrick Dondl, Freiburg Alexander Düster, Hamburg Heike Faßbender, Braunschweig Melina Freitag, Potsdam Gero Friesecke, München Gregor Gassner, Köln Daniel Juhre, Magdeburg Michael Kaliske, Dresden Markus Kästner, Dresden Marc-André Keip, Stuttgart Ralf Müller, Kaiserslautern Nina Reiter, Hamburg Thomas Richter, Magdeburg Renate Sachse, München Claudia Schillings, Berlin Jörg Schröder, Essen Karsten Urban (Chair), Ulm Utz von Wagner, Berlin Andrea Walther, Berlin Elmar Woschke, Magdeburg

SCIENTIFIC PROGRAME						
	Monday March 18 th	Tuesday March 19 th	Wednesday March 20th	Thursday March 21st	Friday March 22 nd	
08:30 09:00		Contributed	Contributed Sessions	Contributed	Contributed	
09:30 10:00		Sessions	Coffee Break Poster Session (G22A)	Sessions	Sessions	
10:30	Registration (G22 Foyer)	Coffee Break	R. v. Mises	Coffee Break	Coffee Break	
11:00	(=, =,	Plenary 2	Lecture(s) (H1+H5*)	Plenary 4	Plenary 7	
11:30		(H1+H5*)	GAMM	(H1+H5*)	(H1+H5*)	
12:00		Plenary 3 (H1+H5*)	General Assembly (H1)	Plenary 5 (H1+H5*)	Plenary 8 (H1+H5*)	
13:00	Opening (H1+H5*)	Lunch	Lunch / YAMM Lunch / NIAM /	Lunch	Closing (H1+H5*)	
14:00	Prandtl Lecture (H1+H5*)	Minisymposia	DEKOMECH Contributed	Contributed		
15:00 15:30	Plenary 1 (H1+H5*)	+ DFG-PP	Sessions	Sessions		
16:00	Coffee Break	Coffee Break Poster Session	Coffee Break	Coffee Break		
16:30 17:00	Young	Contributed	Contributed	Plenary 6 (H1+H5*)		
17:30 18:00	Researchers' Minisymposia	Sessions	Sessions	Contributed Sessions		
18:30						
19:00						
19:30	Welcome					
20:00	Reception (Johanniskirche)	Public Lecture (H5 + H1*)	Conference			
20:30	,		Dinner (Festung			
			Mark)			
	* - live video broadcast					



Plenary Lectures - Mathematics			
Eric Cancès (École des Ponts Paris)	Conquering the quantum world: old problems and new challenges for the applied mathematics community		
Maria Giovanna Mora (Università di Pavia)	Nonlocal interaction problems with anisotropy		
Sven Leyffer (Argonne National Labs)	Solving massive combinatorial optimization problems with PDE constraints		
Karen E. Willcox (UT Austin, Oden Institute)	Enforcing physics structure in scientific machine learning: The role of projection-based reduced-order modeling		

Plenary Lectures - Mechanics			
Michael Beitelschmidt (TU Dresden) Dynamics and control of aerial manipulation			
Stefanie Elgeti (TU Vienna) Mixed-initiative engineering design			
François Hild (ENS Paris-Saclay)	Contributions of 4D imaging in mechanics of materials		
Kerstin Weinberg (U Siegen)	Dynamic fracture simulations with peridynamics and phase-field fracture		

Special Lectures

Ludwig Prandtl Memorial Lecture

Laurette Tuckerman (Sorbonne Université, France)

Turbulent-laminar patterns

Public Lecture (presented in German)

 $\textbf{Peter Streitenberger}, Otto\text{-}von\text{-}Guericke\text{-}Gesellschaft}$

Vakuum und Luftdruck - Otto von Guericke und die wissenschaftliche Revolution im 17. Jahrhundert (mit Vorführung von Guerickes "Magdeburger Experimenten")



Minisymposia 1 Distributed Control and Optimization: Theory and Applications Organizers: Henrik Ebel (U Stuttgart) Kathrin Flaßkamp (U d. Saarlandes) 2 Hierarchical Modeling in Computational Engineering Organizers: Julia Kowalski (RWTH Aachen) Jan Giesselmann (TU Darmstadt) Manuel Torrilhon (RWTH Aachen) **Matrix Nearness Problems and Applications** 3 Tim Mitchell (Queens College NY, USA) Organizers: Matthias Voigt (Uni Distance Suisse, Brig, Switzerland) 4 Kernel Methods in Data Analysis and Computational Science Organizers: Jochen Garcke (U Bonn) Andre Uschmajew (U Augsburg) Free Boundary Problems in the Sciences: PDE Analysis and Modeling 5 Organizers: Sebastian Hensel (HCM Bonn) Greta Marino (U Augsburg)

	Young Researchers' Minisymposia				
1	Mechanics and Mathe	matics of Sea Ice			
Organizers:		Carolin Mehlmann (OVGU Magdeburg) Carina Schwarz (U Duisburg-Essen)			
2	New Perspectives for Approximation	Model Order Reduction: Dynamical Low-rank			
	Organizers:	Jonas Kusch (U Innsbruck) Dominik Sulz (U Tübingen)			
3	Dynamical Systems: I	Discretization, Model Reduction and Learning			
	Organizers:	Idoia Cortes Garcia (TU Eindhoven) Katharina Klioba (TU Hamburg) Manuel Schaller (TU Ilmenau)			
4	Model Update and Par	rameter Identification			
	Organizers:	Henning Wessels (TU Braunschweig) Alexander Henkes (TU Braunschweig)			
5	5 Computational Mechanics of Active Biological Systems				
	Organizers:	Lena Lambers (U Stuttgart) Sebastian Brandstätter (U d. BW München)			
		Sebastian Brandstätter (U d. BW München)			



		GAMM-Related DFG Programs	
1	SPP 2353: Daring More Intelligence – Design Assistants in Mechanics and Dynamics		
	Organizer:	Peter Eberhard (U Stuttgart)	
2	SPP 2298: Theoreti	cal Foundations of Deep Learning	
	Organizer:	Gitta Kutyniok (LMU München)	
3	SPP 2256: Variational Methods for Predicting Complex Phenomena in Engineering Structures and Materials		
	Organizer:	Georg Dolzmann (U Regensburg)	
4	SPP 2311: Robust Coupling of Continuum-Biomechanical in Silico Models to establish active biological System Models for later use in clinical Applications - Co-design of Modeling, Numerics and Usability		
	Organizer:	Oliver Röhrle (U Stuttgart)	
5	SPP 2410: Hyperbo Randomness	lic Balance Laws in Fluid Mechanics: Complexity, Scales,	
	Organizer:	Christian Rohde (U Stuttgart)	
6	GRK 2297: Mathem	atical Complexity Reduction	
	Organizer:	Sebastian Sager (OVGU Magdeburg)	



Other Events

YAMM: Young Academics in Applied Mathematics and Mechanics

Organizer: Jan-Hendrik Bastek (ETH Zürich)

Poster session of the GAMM Juniors

Organizer: Nina Reiter (FAU Erlangen-Nürnberg)

In the poster session, the GAMM Juniors present aspects of their current research from different fields of Applied Mathematics and Mechanics. On March 19th (16-16:30) and March 20th (9:30-10:30) the poster's authors will be available for discussion at the poster station.

Sections				
S 01	S 01 Multi-body dynamics, mechatronics and robotics			
	Organizers:	Tamara Nestorovic (RU Bochum) Atta Oveisi (RU Bochum)		
S 02	Biomechanics			
	Organizer:	Silvia Budday (FAU Erlangen-Nürnberg)		
S 03	Damage and frac	etura machanice		
0.00	Organizers:	Andreas Ricoeur (U Kassel)		
	3	Steffen Gerke (U d. BW München)		
S 04	Structural mecha			
	Organizers:	Sven Klinkel (RWTH Aachen) Steffen Freitag (KIT Karlsruhe)		
S 05	Oscillations			
	Organizer:	Merten Stender (TU Berlin)		
		Alice Cicirello (U Cambridge)		
S 06.1	Metavial medallin	au with matala		
5 00.1	Material modellin Organizers:	Jörn Mosler (TU Dortmund)		
	Organizers.	Patrick Kurzeja (TU Dortmund)		
		r dation real zoja (10 Doraniana)		
S 06.2	Material modelling	ng with metals		
	Organizers:	Alexander Lion (U d. BW München)		
		Loredana Kehrer (KIT Karlsruhe)		
S 07	Coupled problen	ne		
301	Organizers:			
	Organizoro.	Jörg Schröder (U Duisburg-Essen)		
	Organizers:	Alexander Düster (TU Hamburg) Jörg Schröder (U Duisburg-Essen)		



S 08	Multiscales and homogenization				
	Organizers:	Matti Schneider (U Duisburg-Essen)			
		Tobias Kaiser (TU Dortmund)			
S 09	Laminar flows and transition				
5 09	Organizer:	Olaf Wünsch (U Kassel)			
	Organizor.	oral Warison (O Nassor)			
S 10	Turbulence and r				
	Organizers:	Gabor Janiga (OVGU Magdeburg)			
		Samuel Voß (OVGU Magdeburg)			
S 11	Interfacial flows				
•	Organizers:	Tomislav Maric (TU Darmstadt)			
		Mathis Fricke (TU Darmstadt)			
0.40	10 /				
S 12	Waves and acous				
	Organizers:	Natalie Rauter (HSU Hamburg) Wolfgang Weber (HSU Hamburg)			
		wongang weber (noo namburg)			
S 13	Flow control				
	Organizers:	Jan Heiland (OVGU Magdeburg)			
		Richard Semaan (TU Braunschweig)			
		Sebastian Peitz (U Paderborn)			
S 14	Applied analysis				
	Organizers:	Patrik Knopf (U Regensburg)			
		Xian Liao (KIT Karlsruhe)			
0.45		Atti - Att			
S 15	Uncertainty quan Organizers:	Lorenzo Tamellini (IMATI Pavia)			
	Organizers.	Kerstin Lux (TU Eindhoven)			
S 16	Optimization				
	Organizers: Evelyn Herberg (U Heidelberg)				
		Christian Kahle (U Koblenz)			
S 17	Applied and num	erical linear algebra			
0	Organizers:	Davide Palitta (Bologna U)			
		Kathryn Lund (MPI Magdeburg)			
S 18		ds for differential equations			
	Organizers:	Christian Wieners (KIT Karlsruhe) Philip Freese (TU Hamburg)			
		Timp Troose (TO Hamburg)			



S 19	Optimization of o	differential equations
	Organizers:	Anne-Therese Rauls-Ehlert (TU Darmstadt)
		Hannes Meinlschmidt (FAU Erlangen-Nürnberg)
0.00		
S 20	Dynamics and co	
	Organizers:	Friedrich Philipp (TU Ilmenau) Nicole Gehring (JKU Linz)
		Nicole Geriffing (JRO Liftz)
S 21	Mathematical sig	nal and image processing
· - ·	Organizers:	Anne Wald (Georg-August-U Göttingen)
	3	Johannes Maly (LMU München)
S 22	Scientific compu	
	Organizers:	Christian Hesch (U Siegen)
		Andrea Walther (HU Berlin)
S 23	Annlied encycles	, thoom,
5 23	Applied operator	Amru Hussein (RPTU Kaiserslautern-Landau)
	Organizers:	Martin Grothaus (RPTU Kaiserslautern-Landau)
		ividitiii Grotifaus (NPTO Kaisersiauterii-Landau)
S 24	History of applie	d mathematics and mechanics
	Organizer:	Holm Altenbach (OVGU Magdeburg)
	_	, , ,
0.05		
S 25		nd mathematical methods in data science
	Organizers:	Max Pfeffer (Georg-August-U Göttingen)
		Franziska Nestler (TU Chemnitz)
S 26	Modelling analy	sis and simulation of molecular systems
3 20	Organizers:	Sebastian Matera (Fritz-Haber-Institut der MPG)
	Organizora.	Michael Herbst (EPF Lausanne)
		mondo Horoct (El F Eddodinio)

Conference Venues & Maps

G22



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G16



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- Lecture hall H2
- Registration (only on Monday, March 18th)



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Mensa

• Lecture hall H5



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- Lecture hall H1
- Opening

- · Daily lunch
- Conference registration (Tuesday Friday)

Johanniskirche



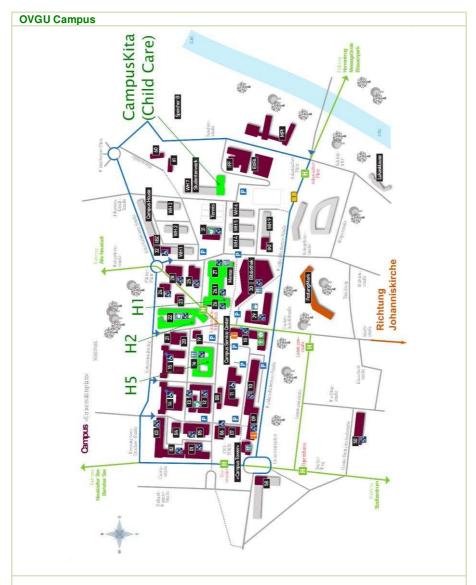
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Welcome reception, Johannisbergstr. 1, 39104 Magdeburg (1km away from OVGU campus)





Buildings 16, 22, and 26 are the main buildings of GAMM 2024. The conference dinner will be held in the Festung Mark, south of the campus across the street on Walther-Rathenau-Straße.



	Abstract Submission
Dates	Abstract submission starts on October 1 st, 2023 and closes December 1 st, 2023.
	The notification of acceptance is scheduled for January 12 th , 2024.
Submission	Abstracts have to be submitted via the online submission system:
	https://www.conftool.org/gamm2024/
Call for Contributions	All participants are invited to submit an abstract for a short communication (max. 400 words, plain text) in one of the sections (20 minutes including discussion).
	For a contribution in a minisymposium, young researchers' minisymposium, and GAMM related DFG priority programs, an explicit invitation by the respective organizers is mandatory.
	Authors are kindly requested to write the abstract in English. Each participant is allowed to present one paper only .
	The collected abstracts will be published online.
	For possible publication of the accepted lectures in the <i>Proceedings</i> of <i>Applied Mathematics and Mechanics</i> (PAMM), see the relevant information below.
	Please assign your abstract to a section during the online submission. Additionally, please give a set of keywords related to the abstract.



	Registratio	n		
Registration	Participants are required to register. Please note that the registration fee does not include accommodation. Online registration is possible as of November 20th , 2023 through the website:			
	https://www.conftool.org/g	amm2024/		
	and expires on March 1 st possible. Online registration		e registration is still	
Conference fee		Early Fee until January 19 th , 2024	Regular Fee from January 20th, 2024	
	GAMM Members (with or without contribution)	380 €	430 €	
	Non-Members (with or without contribution)	480 €	530 €	
	Accompanying Person (more information: see below)	90 €	90 €	
	+ Conference Dinner (limited to 600 participants)	+ 85 €	+ 85 €	
	Bachelor/Master Students (without contribution)	0€	0€	
	After March 1 st , 2024, only on-site registration and payment is possible.			
Registration fee includes	 Participation Book of abstracts (digital) Final program Public lecture Coffee breaks Welcome reception (limited to 500 participants on "first come, first served" basis) Certificate of attendance 			
Accompanying persons	Are registered by the related participant and are welcome to join the Welcome reception (March 18 th , 2024) – please note that we are limited to 500 participants here Public lecture (March 19 th , 2024) Conference dinner (March 20 th , 2024 – separate Conference Dinner ticket (+85 Euro) is required)			
Methods of payment	Payment of the registration fee can be made by credit card or by bank transfer.			



Conditions and cancellation	For cancellations of registrations received by January 31st, 2024, the booking fee less an administrative fee of 100 € will be refunded. For cancellations received after this date, no refunds are made. The cancellation conditions for hotel rooms are based on the terms and conditions of the respective accommodation.		
Opening hours registration desk	Monday, Tuesday, Wednesday, Thursday, Friday,	March 18 th March 19 th March 20 th March 21 st March 22 nd	09:00–17:30 – G22 foyer 08:00–16:30 – Mensa 1 st floor 08:00–16:30 – Mensa 1 st floor 08:00–16:30 – Mensa 1 st floor 08:00–14:30 – Mensa 1 st floor

Accommodation

Special hotel contingents at reduced rates are available for this year's GAMM Annual Conference. Note that these quotas are limited, both, in time and quantity. Refer to the https://jahrestagung.gamm-ev.de/annual-meeting-2024/important-dates-fees page for the exact expiration dates and links for the booking. Please use the keyword "GAMM2024" to access these quotas. Should all contingents be exhausted, more accommodation options are available in the city of Magdeburg during the GAMM Annual Meeting.



Publication of Lectures				
Plenary lectures	Plenary lectures can be published in the regular issues of ZAM ("Zeitschrift für Angewandte Mathematik und Mechanik").			
Papers presented in minisymposia, YR-minisymposia, and in sections	Papers presented at minisymposia, YR-minisymposia, and in sections can be published electronically in PAMM ("Proceedings in Applied Mathematics and Mechanics").			
	The papers are strictly limited to 6 pages for all contributions (minisymposium, YR-minisymposium, DFG-PP section, a special topic lecture of a section, contributed lecture to the sections.)			
	The editors reserve the right to deny publication of a manuscript based on the referee's judgment. Papers need to be prepared in accordance with Wiley's Author's Instructions for Publication at			
	http://www.gamm-proceedings.org/			
	Papers have to be submitted after the conference by May 1 st , 2024 via the website			
	https://mc.manuscriptcentral.com/pamm			

Childcare

We offer flexible childcare service for children between 2 months and 6 years of age during the conference. If you are interested or need further information, please contact us at gamm2024@ovgu.de until January 15th, 2024.

Local Contacts			
Chairpersons	Peter Benner Daniel Juhre Thomas Richter Elmar Woschke		
Conference office	Janine Holzmann Madeleine Ruhbaum	gamm2024@ovgu.de	



Important Dates			
Start of abstract submission	October 1st, 2023		
Start of online registration	November 20 th , 2023		
Abstract submission deadline for talks	December 1 st , 2023		
Notification of acceptance of abstract	January 12 th , 2024		
Preregistration for child care	January 15 th , 2024		
Closure of early online registration (Early fee)	January 19 th , 2024		
Closure of online registration (On-site registration is still possible)	March 1 st , 2024		
PAMM submission deadline	May 1 st , 2024		



Special Events			
Monday, March 18 th	Opening 13:00 – 14:00, H1 (G26) live broadcast in H5(G16)		
	Ludwig Prandtl memorial lecture 14:00 – 15:00, H1 (G26)		
	Welcome reception 19:00 – 22:00, Johanniskirche		
Tuesday, March 19 th	Poster session 16:00 – 16:30, G22A		
	Public lecture 19:30 – 21:00, H5 (G16) live broadcast in H1(G26)		
Wednesday, March 20 th	Poster session 09:30 – 10:30, G22A		
	Richard-von-Mises award lecture 10:30 – 11:30, H1 (G26)		
	GAMM General Assembly 11:30 – 13:00, H1 (G26)		
	DEKOMECH Assembly 13:00 – 14:00, Raum 203 (G22A)		
	NIAM Assembly 13:00 – 14:00, H1 (G26)		
	YAMM lunch Young Academics Meet Mentors 13:00 – 14:00, Senatssaal (G05)		
	Conference dinner 19:30 – 23:00, Festung Mark		
Friday, March 22 nd	Closing 13:00 – 14:00, H1 (G26) live broadcast in H5(G16)		

Conference Dinner



© Festung Mark, Magdeburg

The conference dinner will be held within the historic surroundings of the former cannon passages and casemate vaults of the Festung Mark right around the corner of the main campus. Once integral to the largest Prussian fortress, this unique venue offers a truly remarkable setting for such an event.

Experience the grandeur of the eleven-meter-high vaults and uncover the mysteries hidden within the niches. Step into the expansive fortress courtyard, steeped in more than five centuries of history along the city wall. This extraordinary backdrop will provide a memorable atmosphere as we gather for our conference dinner.

We encourage you to seize this opportunity to be part of this hopefully unforgettable evening and secure your place for the conference dinner together with the registration.



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(4:30h)

	Travelling to Magdeburg by
. car	Magdeburg is connected to the national main road network via two autobahns. The A14 leads to Magdeburg from the south (Leipzig – Halle). The A2 connects to Berlin in the east and Duisburg, Essen, Dortmund, Hannover and Wolfsburg in the west.
train	Magdeburg Hbf is well connected by a network of regional and the faster intercity trains. Exemplary travel times to • Halle, Bitterfeld, Braunschweig, Stendal, Potsdam: 1 hour • Berlin, Leipzig, Hanover: 2 hours • Dresden, Nuremberg, Kassel, Bielefeld, Bremen, Hamburg, Rostock: 3 hours • Munich, Frankfurt, Dusseldorf, Kiel, Szceczin, Poznan: 5 hours • Amsterdam, Brussels, Freiburg, Innsbruck, Linz, Prague, Wroclaw, Odense: 7 hours See www.bahn.de for connections and bookings.
plane	Possible airports (travel time to Magdeburg by train) are Leipzig/Halle (1:20h), Berlin (2:10h), Hannover (2:00h), Frankfurt

Public transportation in Magdeburg ...

Magdeburg has a dense network of public transport that runs 24/7 with the most frequent service during regular working and commuting hours. The university is connected via the tram lines 1, 4, 5, 8, 9, 10 (stop at **Universität**), line 6 (**Listemannstrasse**), and line 2 (stop at **Universitätsbibliothek**). A tram ride to Hauptbahnhof takes 11 min, and to the cathedral (Domplatz) 10 min. Use the mobile app *DB-Navigator* or www.bahn.de to find tram connections in Magdeburg.



Venue



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The "Ottostadt" Magdeburg cannot only point to a multifaceted history of more than 1200 years with great traditions, periods of prosperity of European significance and severe upheavals, it is more than ever a city in transition.

Since the German reunification, Germany's second greenest major city has been the capital of Saxony-Anhalt, a business and logistics center, an internationally recognized location for science and research, and a sought-after conference and congress venue. With a good 230,000 inhabitants and more than 18,000 students from all over the world, Magdeburg is a city full of world history, colorfulness, sports, culture and thirst for knowledge - a future-oriented city between tradition and modernity.