18th IEEE Workshop on Nonlinear Dynamics of Electronic Systems

- Program -

Dresden University of Technology
Dresden, Germany

26 – 28 May 2010

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organized by:

Dresden University of Technology

in cooperation with:

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TECHNISCHE UNIVERSITÄT DRESDEN

IEEE

Hochschule für Technik und Wirtschaft Dresden
University of Applied Sciences

Welcome Address to NDES 2010 in Dresden

Dear colleagues and friends,

we would like to extend a warm welcome to all the participants of the International Workshop NDES 2010, and we thank you very much for your participation.

NDES 2010 is the eighteenth in a series of workshops, and some of the NDES family might remember the way it took almost around the world:

Dresden (1993) – Krakow (1994) – Dublin (1995) – Seville (1996) – Moscow (1997) - Budapest (1998) - Rønne (1999) – Catania (2000) - Delft (2001) – Izmir (2002) – Scuol (2003) – Évora (2004) - Potsdam (2005) – Dijon (2006) – Tokushima (2007) - Nizhniy Novgorod (2008) - Rapperswil (2009).

– Participants of the first NDES in 1993-

Now it will be held again in the place where it started, and we expect that the workshop will not only be an interesting event in nonlinear science, but that it will also provide all of you with the best of science and education. All program components of NDES, such as invited talks given by well-known lecturers, presentations of research results and a special session devoted to neural networks will hopefully attract as many participants as in previous years.

We also hope that you will enjoy your stay here in our beautiful city of Dresden.

The workshop was sponsored by the German Research Foundation (DFG), technically co-sponsored by the Circuit and Systems Society (CASS) of the Institute of Electrical and Electronic Engineers (IEEE) Inc., and supported by the Dresden University of Technology. We would like to express our appreciation and sincere thanks to all sponsoring organizations.

Furthermore, we thank all who contributed with their efforts and their engagement to make our workshop possible.

Welcome to Dresden!

Welcome to NDES 2010!

We wish you a very pleasant stay!

Prof. Ronald Tetzlaff

General Chair

Prof. Wolfgang Schwarz

Program Chair

Prof. Kristina Kelber

Publication Chair

Conference program

May 25, 2010 (Tuesday)

Time slot	*Schedule / Room*
16:00-20:00	Registration at Görges-Bau (conference venue),
18:00-20:00	Welcome and Get-Together / Görges-Bau (conference venue)

May 26, 2010 (Wednesday)

Time slot	*Time*	*Schedule*	**Room** Page
08:00-17:00		Registration at Görges-Bau (conference venue)	
08:15-08:30		Welcome Note *Ronald Tetzlaff*	**226**
08:30-10:00		**Invited lectures 1:** *Chairman: Wolfgang Schwarz*	**226**
	08:30	**Guanrong (Ron) Chen** (City University of Hong Kong, China) Pinning Control of Nonlinear Network Synchronization	
	09:15	**Maciej Ogorzalek** (Jagiellonian University, Krakow, Poland) Fractal Techniques Boost Performance of Microelectronic Circuits	
10:00-10:30		Coffee break	
10:30-11:50		Session 1.1: **Nonlinear circuits & systems 1** *Chairman: Guanrong (Ron) Chen*	**127**
	10:30	The Barkhausen Criterion (Observation ?) *Erik Lindberg.*	
	10:50	Asymptotic and Numerical Analysis of Equation with Large Delay *Ilya S. Kashchenko.*	
	11:10	A New Quality Factor for the Comparison of Multiplier Architectures *Ahmed Darrat and Wolfgang Mathis.*	
	11:30	Design of coupling for arbitrary lag synchronization in chaotic oscillators *Prodyot Kumar Roy, Sourav Kumar Bhowmick, Ioan Grosu and Syamal Kumar Dana.*	

Time slot	*Time*	*Schedule*	**Room** Page
10:30-11:50		Session 1.2: **Control & Synchronisation 1** *Chairman:Yoshifumi Nishio*	**229**
	10:30	Desynchronization of Mean-Field Coupled Oscillators by Remote Virtual Grounding *Arunas Tamasevicius, Skaidra Bumeliene, Elena Tamaseviciute, Gytis Mykolaitis and Raimundas Kirvaitis.*	
cancelled	10:50	Nonlinear Observer Based Control of a Chaotic Phase Locked Loop *Mohamed Mchiri and Karim Trabelsi.*	
cancelled	11:10	Observer approch for synchronization of chaotic time delay Chua circuit: application to secure communication *Karim Trabelsi and Mohamed Mchiri.*	
	11:30	Communication system with chaotic radiopulses in the real channels *Lev Kuzmin.*	
11:50-12:00		break	
12:00-13:20		Session 2.1: **Nonlinear circuits & systems 2** *Chairman: Erik Lindberg*	**127**
	12:00	Generation of the microwave dynamic chaos in ring self-oscillatory system on CMOS structure *Alexander Dmitriev, Elena Efremova and Artem Nikishov.*	
	12:20	Influence of electron velocity dispersion on dynamics of electron beam with virtual cathode *Semen Kurkin, Alexander Hramov and Alexey Koronovskii.*	
	12:40	Observer Based Measurement of the Adenosine Diphosphate Concentration in Multimodal Oscillatory Pancreatic Beta Cells *Klaus Röbenack.*	
	13:00	Spiking in Delay-Coupled FitzHugh-Nagumo Systems with Feedback *Anastasiia Panchuk.*	
12:00-13:20		Session 2.2: **Control & Synchronisation 2** *Chairman: Toshimichi Saito*	**229**
	12:00	Synchronization in Two Polygonal Oscillatory Networks Sharing a Branch *Yoko Uwate, Yoshifumi Nishio and Ruedi Stoop.*	
	12:20	Chaos Control of the Chaotic Colpitts Oscillator *Arturo Buscarino, Luigi Fortuna, Mattia Frasca and Gregorio Sciuto.*	
	12:40	Generalized synchronization in mutually coupled dynamical systems *Olga Moskalenko, Alexey Koronovskiy, Alexander Hramov and Svetlana Shurygina.*	
	13:00	Chaotic Behavior of Hysteresis Cellular Nonlinear Networks and its Control *Angela Slavova.*	

Time slot	*Time*	*Schedule*	**Room** Page
13:20-14:30		Lunch („Alte Mensa“)	
14:35-15:20		**Invited lecture 2:** *Chairman: Vladimir Nekorkin*	**226**
		Michael Tse (Hong Kong Polytechnic University, China) Composing Music by Complex Networks	
15:20-15:30		Coffee break	
15:50-16:50		Session 3.1: **Chaos phenomena & control** *Chairman: Alexander Dmitriev*	**127**
cancelled		Focusing Time--Dependent Billiards as Maxwell's Demon *Alexander Loskutov and Alexei Ryabov*	
	15:50	Chaos based networking systems sharing a common nonlinearity *M. Santhiah and P. Philominathan.*	
	16:10	Noise-induced Phenomena in a Bio-inspired Chemical Sensor Array *Kazuki Nakada, Katsumi Tateno, Hatsuo Hayashi and Kiyonori Yoshii.*	
	16:30	Explicit model predictive control for the start-up and orbital stabilization of a boost converter *Axel Schild, Jan Lunze and Wolfgang Schwarz.*	
15:50-17:10		Session 3.2: **Signal processing** *Chairman: Michael Tse*	**229**
	15:50	Music Score Recognition System for a Robot controlling a Theremin *Kristina Kelber, Nils Wabnik and Carlos Hernandez Franco.*	
	16:10	A Cochlear Active Transmission-Line Model without Wave Reflection *Tohru Kohda, Takao Une and Kazuyuki Aihara*	
	16:30	Automatic Discovery of Subgoals in Reinforcement Learning using Betweeness Centrality Measures *Ali Ajdari Rad, Parham Moradi, Alireza Kahdivi and Martin Hasler.*	
	16:50	Prediction of Time-Series Data using PSpice and Runge-Kutta Method *Kazuhisa Yoshimatsu, Masayuki Yamauchi and Yoshifumi Nishio.*	

May 27, 2010 (Thursday)

Time slot	*Time*	*Schedule*	**Room** Page
08:00-17:00		Registration at Görges-Bau (conference venue)	
08:30-10:00		**Invited lecture 3:** *Chairman: Ronald Tetzlaff*	**226**
		Leon Chua (University of California at Berkeley, USA) From G-clef to 137	
10:00-10:30		Coffee break	
10:30-11:50		Session 4.1: **Nonlinear circuits & systems 3** *Chairman: Patrick Marcié*	**127**
	10:30	Circuit Implementation of an A/D Converter Based on the Scale-Adjusted β-Map Using a Discrete-Time Integrator *Yoshihiko Horio, Kenya Jin'no, Tohru Kohda and Kazuyuki Aihara.*	
	10:50	Peak Search Algorithm of Frequency Characteristics with Unstable Region *Hiroshige Kataoka, Yoshihiro Yamagami and Yoshifumi Nishio.*	
	11:10	An Experimental Investigation of PWM-1 Controlled Circuit with Time Delay *Kenichi Tasaki, Hiroyuki Asahara and Takuji Kousaka.*	
	11:30	Qualitative Mechanism of DC/DC Converter containing Spike Noise *Hiroyuki Asahara and Takuji Kousaka.*	
10:30-11:50		Session 4.2: **Neural networks, neurodynamics, robots 1** *Chairman: Maciej Ogorzalek*	**229**
	10:30	Two-Compartment Phenomenological Model of Dopaminergic Neuron *Denis Zakharov, Alexey Kuznetsov and Vladimir Nekorkin.*	
	10:50	An adaptive coupling scheme for the Kuramoto model of complex networks *Ning Bo, Hou Jian-Li, Ren Quansheng and Zhao Jianye.*	
	11:10	Improved Divided Chaotic Associative Memory for Successive Learning *Yohei Takamori and Yuko Osana.*	
	11:30	Network motifs in STDP-driven neuronal networks *Quansheng Ren, Kiran M. Kolwankar, Areejit Samal and Juergen Jost.*	
11:50-12:00		break	

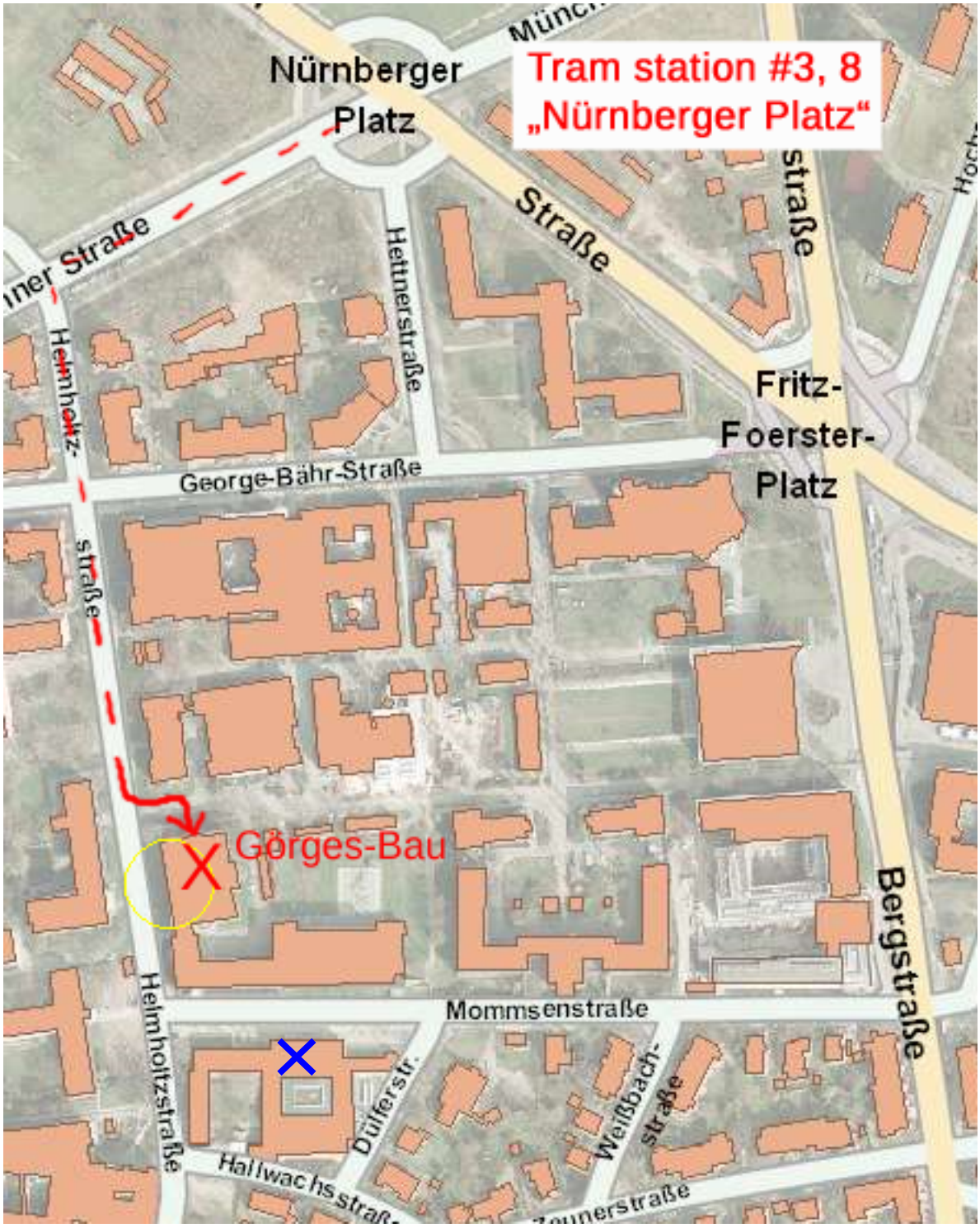
Time slot	*Time*	*Schedule*	**Room** Page
12:00-13:20		Session 5.1: **Nonlinear circuits & systems 4** *Chairman: Kristina Kelber*	**127**
	12:00	An Exactly Solvable Chaotic Circuit *Ned Corron, Mark Stahl and Jonathan Blakely.*	
	12:20	Complex dynamics in a new PWL chaotic circuit *Arturo Buscarino, Luigi Fortuna and Mattia Frasca*.	
	12:40	Shil'nikov Chaos and Mixed-mode Oscillation in asymmetry-induced Chua circuit *Satyabrata Chakraborty and Syamal Kumar Dana.*	
	13:00	Penetration and Reflection Mechanisms of Phase-Inversion Waves in Lattice Oscillators *Hitoshi Aburatani, Suguru Yamane, Masayuki Yamauchi and Yoshifumi Nishio.*	
12:00-13:20		Session 5.2: **Neural networks, neurodynamics, robots 2** *Chairman: Angela Slavova*	**229**
	12:00	Data Clustering based on Hebbian Learning in Inhomogeneous Coupled Map Lattices *Thomas Ott and Urs Mürset*	
	12:20	Transient Dynamics and Metastable States in an Ensemble of Synaptically Coupled Morris-Lecar Neurons *Vladimir Nekorkin, Dmitry Kasatkin and Aleksey Dmitrichev.*	
	12:40	On the Chaos Associative Memory with Tchebycheff Activation Function *Masahiro Nakagawa.*	
13:20-14:30		Lunch („Alte Mensa“)	
14:35-15:20		**Invited lecture 4:** *Chairman: Syamal Dana*	**226**
		Vladimir I. Nekorkin (Institute of Applied Physics, RAS Nizhny Novgorod, Russia) Nonlinear Dynamical Approach for Study of Neural Networks Activity	
15:20-15:30		Coffee break	

Time slot	*Time*	*Schedule*	**Room** Page
15:50-17:10		Session 6.1: **Bifurcation & Chaos 1** *Chairman: Tohru Kohda*	**127**
	15:50	Detecting unstable periodic spatio-temporal states of spatial extended chaotic systems *Alexander Hramov and Alexey Koronovskii.*	
	16:10	Phase-flip bifurcation in a system of time-delay coupled oscillators *Vladimir Klinshov and Vladimir Nekorkin.*	
cancelled		T-point-Hopf bifurcation in electronic circuits *Antonio Algaba, Fernando Férnandez, Manuel Merino and Alejandro Rodríguez.*	
cancelled		Global bifurcations in a family of coupled systems *Antonio Algaba, Cristobal Garcia, Manuel Merino and Manuel Reyes.*	
	16:30	Generalizations of Blakesley's Voltage Source Shift Theorem *Albrecht Reibiger (invited lecture)*	
15:50-17:30		Special Session: **Neural networks for cognitive agents** *Chairman: Ruedi Stoop*	**229**
	15:50	Multiobjective optimization of Echo State Networks for multiple motor pattern learning *A. F. Krause, B. Blasing, T. Schack*	
	16:10	Parallel Central Pattern Generators for locomotion control in a humanoid robot model *I. Aleo, P. Arena, L. Patane*	
	16:30	Reaction-diffusion-like Systems for event representation and beyond *J.A. Villacorta-Atienza, V. A, Makarov, M. G. Velarde*	
	16:50	Chunking by naming: A nonlinear recurrent network for storing hierarchical memory contents *H. Cruse, M Schilling*	
	17:10	Tribot: a hybrid robot for cognitive algorithm implementation *P. Arena, L. Patane', M. Pollino, C. Ventura*	
19:00		Visit to the Dresden cathedral (Catholic Church of the Royal Court of Saxony), introduction to the SILBERMANN organ & short concert	
20:00		Conference dinner at Sophienkeller	

May 28, 2010 (Friday)

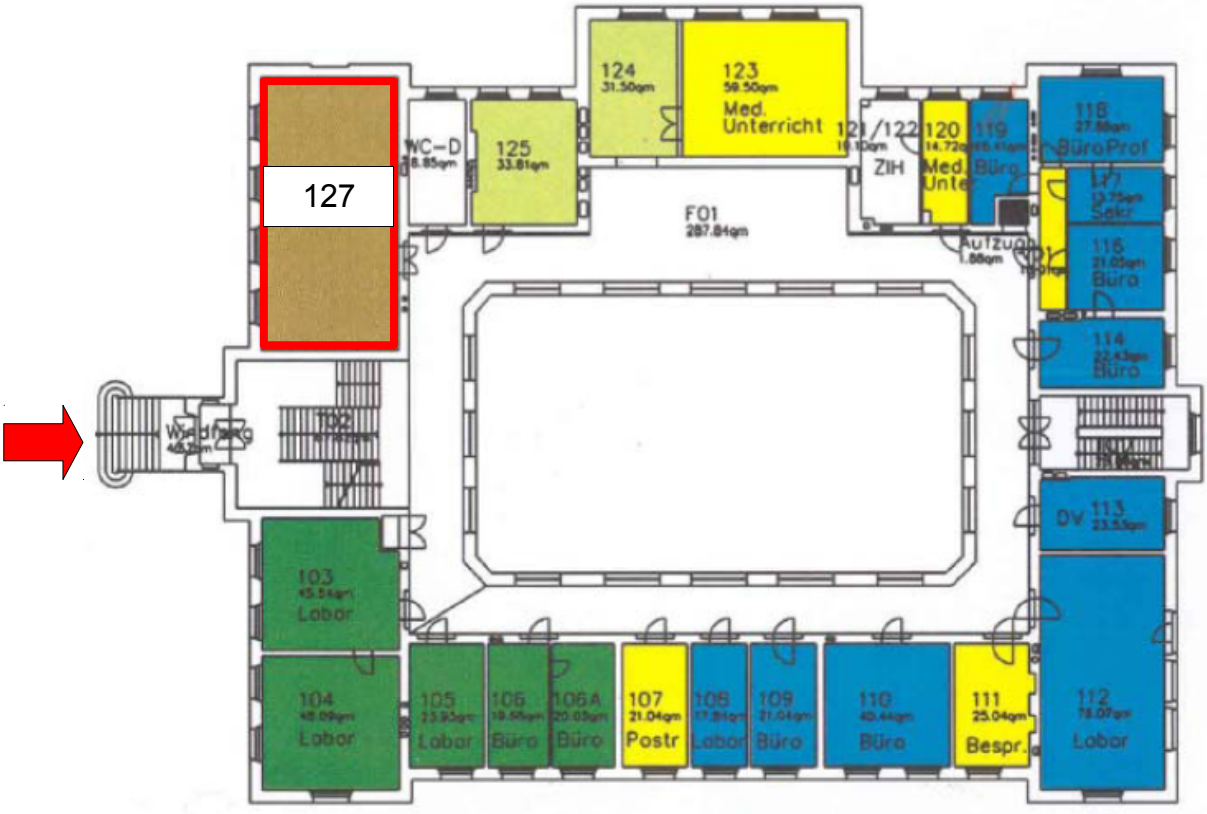
Time slot	*Time*	*Schedule*	**Room** Page
08:00-12:00		Registration at Görges-Bau (conference venue)	
08:30-10:00		**Invited lectures 5:** *Chairman: Martin Hasler*	**226**
	08:30	**Syamal Dana** (Central Instrumentation Indian Institute of Chemical Biology, Kolkata, India) Engineering Synchronization in Chaotic Oscillators by Design of Coupling	
	09:15	**Ruedi Stoop** (University and ETH Zürich, Switzerland) Global real-world shrimp hierarchies	
10:00-10:30		Coffee break	
10:30-11:50		Session 7.1: **Bifurcation & Chaos 2** *Chairman: Ute Feldmann*	**226**
	10:30	Comparison of Eyelet Intermittency and Type-I Intermittency with Noise *Alexander Hramov, Alexey Koronovskiy, Maria Kurovskaya and Olga Moskalenko.*	
	10:50	Bifurcation of a simplified model of the boost converter with solar cell input *Toshimichi Saito and Daisuke Kimura.*	
	11:10	Self-Generation of Chaotic Dissipative Soliton Trains in *Active Ring Resonators with Ferromagnetic Films* *Sergey Grishin and Yurii Sharaevskii.*	
	11:30	Bifurcations in memristive oscillators *Fernando Corinto, Alon Ascoli and Marco Gilli*	
10:30-11:50		Session 7.2: **Nonlinear network analysis** *Chairman: Arunas Tamasevicius*	**229**
	10:30	Exponential Transient Oscillations and Their Stabilization in a Bistable Ring of Unidirectionally Coupled Maps *Yo Horikawa and Hiroyuki Kitajima.*	
	10:50	Bistability and supratransmission in a nonlinear electronic Klein-Gordon network *B. Bodo, S. Morfu, P. Marquie and M. Rossé.*	
	11:10	Memristive effect in the model of superconductive-normal transition *Linda Ponta, Anna Carbone, Marco Gilli and Piero Mazzetti.*	
	11:30	Studying Circuit Disturbances of MOS LC-Tank Oscillators based on Order Reduction Techniques *Jan Bremer, Marco Reit and Wolfgang Mathis*	
11:50-12:00		break	
12:00-12:15		Closing remarks *Wolfgang Schwarz*	**226**
12:15-13:30		Lunch („Alte Mensa“)	
		end of workshop	

How to get to the Conference Venue "Görges-Bau"?



Place for Lunch: "Alte Mensa"

Building "Görges-Bau" – Ground floor



Building "Görges-Bau" – First floor