

Program of the
SPITSE 2014 Symposium
Sense. Enable. SPITSE.

at the *Technische Universität Ilmenau*

July 7-18, 2014, Ilmenau, Germany

Symposium as part of the strategic partnership between
Saint Petersburg Electrotechnical University "LETI", ETU
Moscow Power Engineering Institute, MEI
Technische Universität Ilmenau, TUI

Topics

- Novel technologies for RF, microwave, and optical sensors and devices
- Antennas for RF and microwave sensing
- Energy efficient frontends, wireless power transfer
- Smart sensors, sensor signal acquisition, HW/SW co-design
- Biomedical diagnostics
- Wireless devices and strategies for intelligent traffic systems (ITS)
- Nonlinear dynamic system modeling; analog/digital signal processing, dirty RF
- Wireless sensor networks, network security
- Data fusion and data mining
- Embedded software engineering



SPITSE Symposium 2014
Research Track and Summerschool

“Sense. Enable. SPITSE.”

Technische Universität Ilmenau, July 7-18, 2014

1 Welcome Message

Dear SPITSE 2014 Delegate,

It is our great pleasure to welcome you to the first SPITSE Symposium, which manifests the tremendous progress in the development of the strategic partnership between Technische Universität Ilmenau, the Electrotechnical University St. Petersburg "LETI", and the National Research University Moscow Power Engineering Institute!

Following the kick-off of the DAAD-funded project just a little longer than one year ago, we have succeeded with identifying a number of current topics of mutual scientific interest, and with involving highly motivated experienced senior as well as young scientists in breathing life into this exciting and relevant partnership. The scientific sessions have attracted great interest from within SPITSE and internationally, from academia and industry. Many interesting presentations are awaiting you, including invited contributions from the Distinguished Microwave Lecturer Dr. Chiao, and from experts from DAAD, Lappeenranta/Finland, and Erlangen/Germany. The student summer school offers excellent opportunities for gaining experience, establishing networks, and making friends among young engineering researchers; the program includes a student challenge, a student poster session, best-paper awards, an exchange forum, selected expert tutorials, and a social event.

We are very grateful for the commitment of the authors of more than 60 contributions, which compose the backbone of the impressive scientific and truly interdisciplinary program, built on contributions from Electrical Engineering, Computer Sciences, and Computer Engineering. The program is completed by presentations of research projects going on at TU Ilmenau and bearing significant potential for co-operation and for the merging of research interests and activities on bi-national or European level.

Beside the fascinating joint (ad)venture of composing this event and attractive program for the first time, another challenge was to attract funding. We greatly acknowledge significant financial and technical support, not only from public institutions like DAAD, DFG, LEG Thüringen, the **Faculty Clubs of Electrical Engineering and Computer Sciences**, and the City of Ilmenau, but also from companies in and around Ilmenau, in alphabetical order: Antennentechnik Bad Blankenburg GmbH, CE-Lab GmbH, IMMS GmbH, Rohde & Schwarz GmbH & Co. KG, TETRA Gesellschaft für Sensorik, **Robotik und Automation mbH**, and **X-FAB Semiconductor Foundries AG**.

Finally, we express our sincere appreciation to the members of the local organising team (Hartmut Brauer, Alexander Fleischer, Klaus-Dieter Fritz, Stefanie Kühn, and Detlef Streitferdt), and to many colleagues involved at our partner institutions. Representing many highly motivated and active people, we would just like to mention the Rector Vladimir M. Kutuzov, the Vice-Rector for International Affairs Viktor A. Tupik, Maria A. Kiseleva, and Dmitry V. Kholodnyak at the Electrotechnical University St. Petersburg, and the Rector Nikolay D. Rogalev, the "Founder" of the Moscow-Ilmenau co-operation Igor N. Zhelbakov, and Ekaterina Dolgatcheva at the Moscow Power Engineering Institute.

In concluding, we wish you a fruitful, successful, and sustainable event: Sense! Enable! SPITSE!

Matthias A. Hein and Hannes Töpfer

(SPITSE 2014 General Chair and Co-Chair)

2 Invited Keynotes

Tuesday, July 8th

- **Karin Heistermann**, DAAD, "*The Role of Strategic Partnerships in the Internationalisation of Higher Education*"
- **Thomas Mirow**, "*Horizon2020 possibilities for research funding*"
- **Olaf Mollenhauer**, TETRA GmbH, "*Industrie 4.0 for KMU*"

Wednesday, July 9th

- **Prof. Ph.D. Erkki Lähderanta**, Lappeenranta University of Technology, Finland, "*Co-operation with Russian Universities - benefits for both partners*"
- **Prof. J.C. Chiao**, IEEE-MTT, "*Implantable wireless medical devices and systems*"
- **Prof. Georg Fischer**, FAU Erlangen-Nürnberg, "*Barrier free and mobile e-Health systems at the border between lifestyle and medical technology*"
- **Prof. Valery Lunin**, MEI, "*Diagnostics: sensing, data processing, analysis and classification*"
- **Prof. Hannes Töpfer**, TU Ilmenau, "*Sensors and Sensor Systems for Condition Monitoring*"

Thursday, July 10th

- **Prof. Matthias Hein**, TU Ilmenau, "*Thuringian Centre for Innovation in Mobility*"
- **Prof. Vladimir Kutuzov**, LETI, "*Modern trends in radar technology*"
- **Prof. Dmitry Kholdnyak**, LETI, "*Advanced microwave devices using metamaterial transmission lines*"
- **Evgenia Subkova**, LETI, "*Promotion of young engineering scientists at LETI*"
- **Prof. Giovanni Del Galdo**, Fraunhofer IIS, "*Over-The-Air testing in Virtual Electromagnetic Environments (OTAinVEE): Ongoing Activities in Ilmenau*"
- **Klemens Brückner**, TU Ilmenau, "*Multiphysical Design and Realization of Complex RF Circuits*"

Friday, July 11th

- **Prof. Andreas Mitschele-Thiel**, TU Ilmenau, "*International Graduate School on Mobile Communications*"
- **Prof. Dr. Ralf Sommer**, IMMS, "*Systematic Design Strategies for Multi-physical Sensor Systems*"
- **Jun.-Prof. Detlef Streitferdt**, TU Ilmenau, "*Main Project Artifact: Software Architecture*"

3 Symposium Research Track Program: 7. July – 11. July 2014

Monday, July 7th, 2014

	Leibnizbau, Room: LB 404	Leibnizbau, Room: LB 403
08 ³⁰ - 09 ⁰⁰	Registration	
09 ⁰⁰ - 10 ⁰⁰	Opening of the Symposium Welcome addresses Overview of the program	
10 ⁰⁰ - 10 ⁴⁰	Coffee Break	
	Session 1 – Electrical Engineering Chair: M. Sc. Stefanie Kühn	Session 2 – Computer Science Chair: Jun.-Prof. Daniel Baumgarten
10 ⁴⁰ - 11 ⁰⁰	Sergei Degtiarev <i>Neural filters for impulse noise removal in digital images</i>	Sergey Kobets, Tran Trung Nguyen, Arvid Amthor, Christoph Ament, Ivan Kruzhilov <i>Calibration Algorithm for the Laser Tracker System</i>
11 ⁰⁰ - 11 ²⁰	O.V. Mandrikova, I.S. Solovyev, V.V. Geppener, D.M. Klionskiy <i>Model and algorithms for analyzing the Earth's magnetic field data in periods of increased geomagnetic activity</i>	L. I. Abrosimov, P. A. Ledovsky <i>Distribution of Priorities of Users in Adaptive Computer Networks</i>
11 ²⁰ - 11 ⁴⁰	Yulia Lapteva <i>The Concept for the Development of Spatially Resolved Measurements for Soil Moisture with TEM Waveguides</i>	Ivan Golubev <i>Metadata-driven task scheduling in computer clusters</i>
11 ⁴⁰ - 12 ⁰⁰	I. A. Lamkin, S. A. Tarasov, A. V. Solomonov, S. Yu. Kurin <i>AlGaIn photodiodes for UVA, UVB, UVC ranges</i>	Varshavskiy P.R., Kurilenko I.E., Alekhin R.V. <i>Implementation of Temporal Case-Based Reasoning System for Automate Decision Support and Analysis of Exception Cases for Complex Objects like Parking Management System</i>
12 ⁰⁰ - 13 ⁰⁰	Lunch Break	
	Session 3 – Electrical Engineering Chair:	Session 4 – Computer Science Chair: Msc. Franz Füll
13 ⁰⁰ - 13 ²⁰	Elena Solovyeva <i>Operator approach to nonlinear dynamic system modeling</i>	D. M. Klionskiy, D. I. Kaplun, A. S. Voznesenskiy, V. V. Gulvanskiy <i>Digital filter banks and their implementations using high-performance software-hardware tool</i>
13 ²⁰ - 13 ⁴⁰	Yurii Bichkov, Sergey Scherbakov <i>Analytically-numerical method for analysis of dynamics of mathematical models of deterministic systems with lumped nonstationary parameters</i>	Yury S. Bekhtin, Maria N. Gurieva <i>Wavelet-based Data Fusion of IR Images with FPN using Spatial Oriented Trees</i>
13 ⁴⁰ - 14 ⁰⁰	Serov Andrey <i>Influence of ADC Nonlinearly on the Measurement Error of the Active Power to Code Converter</i>	A. P. Ereemeev, Yu. I. Korolev <i>Temporal Colored Petri Nets as a Tool for Modeling Processes in Complex Real-Time Systems</i>
14 ⁰⁰ - 14 ²⁰	D. Lukyanov, S. Shevchenko, E. Filippova <i>Micromechanical accelerometers based on surface acoustic waves</i>	Oleg Morosin <i>Application of argumentation for inconsistent data</i>
14 ²⁰ - 14 ⁴⁰	E. A. Menkovich, S. A. Tarasov, A. V. Solomonov, I. A. Lamkin <i>GaAs_{1-x}P_x sensors for UV and visible spectral range of photo-sensitivity ranges</i>	Olga V. Gracheva, Pavel R. Varshavskiy <i>Research and Development of Methods and Tools for Collecting and Generating Metadata for Internet Resources</i>

	Leibnizbau, Room: LB 404	Leibnizbau, Room: LB 403
14 ⁴⁰ - 15 ⁰⁰	<i>Coffee Break</i>	
	Session 5 – Electrical Engineering Chair: Dr.-Ing. Sven Rentsch	Session 6 – Computer Science Chair: Jun.-Prof Detlef Streitferdt
15 ⁰⁰ - 15 ²⁰	S. Burenkov, V. Izhutkin <i>Dynamic Software Implementation of a Mathematical Model of Lotka-Volterra</i>	Andrey Shorov, Igor Kotenko <i>Dynamical Attack Simulation for Security Information and Event Management</i>
15 ²⁰ - 15 ⁴⁰	Oleg V. Smirnov <i>Experimental test bench for drawing the pseudo-directivity pattern of tags in RFID-systems</i>	Kholod Ivan, Petukhov Ilya <i>The method of creation data mining algorithms from thread-safe functional blocks</i>
15 ⁴⁰ - 16 ⁰⁰	Matthias Carlstedt, Konstantin Porzig, Hartmut Brauer, Marek Ziolkowski, Hannes Töpfer <i>Defect Detection in Stacked Aluminum Sheets Using Lorentz Force Eddy Current Testing</i>	Nikolay Gubarev <i>Interactive 3D visualization for hydroacoustic monitoring applications</i>
16 ⁰⁰ - 16 ²⁰	Chechenya Sergey Alexandrovich, Khandurin Andrey Vladimirovich <i>Self Similarity of Signals with an Additive Fractal Structure for Information Transmission</i>	Maria Leontieva, Ivan Kruznilov <i>Kohonen maps for star sensor algorithms</i>
16 ²⁰ - 16 ⁴⁰	Debalina Chatterjee, Kurt Blau, Matthias A. Hein <i>Highly Linear Energy-Efficient Spectrum Sensor for Cognitive Radio</i>	V.Barat, S.Sabirzyanova, D.Chernov <i>Data Mining Technology Application for Acoustic Emission Testing Data Analysis</i>
19 ⁰⁰ - 22 ⁰⁰	Welcome Reception	

Tuesday, July 8th, 2014

	Leibnizbau, LB 404	Leibnizbau, LB 403	Foyer, LB 404/403
08 ³⁰ - 09 ⁰⁰	Registration		
09 ⁰⁰ - 09 ⁴⁰	INVITED TALK: Karin Heistermann, DAAD <i>The Role of Strategic Partnerships in the Internationalisation of Higher Education</i>		
09 ⁴⁰ - 10 ⁰⁰	INVITED TALK: Thomas Mirow <i>Horizon2020 possibilities for research funding</i>		
10 ⁰⁰ - 10 ⁴⁰	INVITED TALK: Olaf Mollenhauer, TETRA GmbH <i>Industrie 4.0 for KMU</i>		
10 ⁴⁰ - 11 ⁰⁰	Coffee Break		
	Session 7 – Electrical Engineering Chair: Dr.-Ing Jürgen Sachs	Session 8 – Computer Science Chair: Dr. Bernd Däne	
11 ⁰⁰ - 11 ²⁰	A.M.Guljaev, O.B.Sarach, A.A.Vanin, M.A. Slepneva <i>The Electronic Nose" on the base of nanocrystalline films of tin and rare earth oxides</i>	Bernd Däne <i>Developing and Testing a Specialized Soft Microprocessor Using a Graphical Design Tool</i>	
11 ²⁰ - 11 ⁴⁰	Alexander Kukaev <i>Micro Rate Gyros for Highly Dynamic Objects</i>	Franz FÜßI <i>Customization and Adaption of Product Line Development Depending on Variable Influencing Factors</i>	
11 ⁴⁰ - 12 ⁰⁰	Grechikhin V. A., Zhgoon S. A., Shvetsov A. S. <i>Non-contact and wireless measurements of fast-varying deformations</i>	O.V. Mandrikova, Yu.A. Polozov, N.V. Fetisova (Glushkova), M.S. Kupriyanov <i>Modeling and analysis of complex time series</i>	
12 ⁰⁰ - 13 ⁰⁰	Lunch Break		
	Session 9 – Electrical Engineering Chair: Dipl.-Ing. Klemens Brückner	Session 10 – Biomedical Engineering Chair: Jun.-Prof. Daniel Baumgarten	Student Poster Exhibition
13 ⁰⁰ - 13 ²⁰	Andreas Laute <i>Solar Cell Powered Wireless Network and other Sub-1GHz RF Applications</i>	Jirka Ciemala <i>MDD of Embedded Multicore using oAW</i>	
13 ²⁰ - 13 ⁴⁰	Mehdi Harounabadi, Oleksandr Artemenko, Andreas Mitschele-Thiel <i>Learning-based Geographical Opportunistic Routing in Cognitive Radio Ad Hoc Networks</i>	Vedenina A. <i>Broadening the application of the computerized plantopodography by screening to evaluate the stato-dynamic function of the foot</i>	
13 ⁴⁰ - 14 ⁰⁰	Christopher Schirmer, Markus H. Landmann, Wim A. Th. Kotterman, Giovanni Del Galdo, Albert Heuberger <i>Design Aspects of 3D Wave-Field Synthesis for an Over-The-Air Testbed</i>	D. M. Klionskiy, N. I. Oreshko <i>Adaptive multiscale and multiband approach to multicomponent signal processing</i>	
14 ⁰⁰ - 14 ²⁰	Yu. D. Grigoriev <i>Die strukturelle Optimierung der Messnetze als Problem der Versuchsplanung</i>	Viktor Izhutkin <i>Dynamic Program Realization of Several Matematical Models in Medicine</i>	
14 ²⁰ - 14 ⁴⁰	Oleksandr Andryeyev <i>Spectrum Usage Improvement in Cognitive Radio Networks Using Directional antenna and UAV Capabilities</i>	Dolbikova N.S., Merzlikina E.I <i>Smart sensors used for automation and monitoring of heating substations. Application of smart sensors in university laboratories</i>	

	Leibnizbau, LB 404	Leibnizbau, LB 403	Foyer, LB 404/403
14 ⁴⁰ - 15 ⁰⁰	Coffee Break		
	Session 11 – Electrical Engineering Chair: Dipl.-Ing. Klemens Brückner	Session 12 – Biomedical Engineering Chair: Jun.-Prof. Daniel Baumgarten	
15 ⁰⁰ - 15 ²⁰	Kseniia Shuvarikova <i>Investigation of the influence of anisotropic material properties in transcranial magnet stimulation</i>	Y.M. Inshakov, A.V. Belov <i>Medical Fast Semiconductor Thermometer</i>	SPITSE Strategy Meeting For the SPITSE coordination team only
15 ²⁰ - 15 ⁴⁰	Sebastian Koethe, Suhail Ahmed-khan <i>Radio based use cases for smart grid automation</i>	J. Sachs, M. Helbig, M. Krnec, R. Herrmann, K. Schilling, P. Rauschenbach <i>Pseudo Noise-UWB-Sensors in Medical Engineering and Health care: An overview</i>	
15 ⁴⁰ - 16 ⁰⁰	Stefanie Kühn, Ralf Stephan, Kurt Blau, Matthias A. Hein <i>Transistor-based Electrically Tuneable Reactance Circuits for Metamaterial Transmission Lines</i>	Elena Lerm, Stefan Schramm, Patrick Schikowski, André Kaeding, Daniel Baumgarten <i>A Measurement System for forward stray light analysis of the human eye</i>	
16 ⁰⁰ - 16 ²⁰	Elena Chervakova, Komla Agla, Wolfram Kattanek, Tino Hutschenreuther <i>QoS-aware Ultra-low Power Wireless Sensor Networks</i>	Anisimov A.A. <i>System for noninvasive monitoring of human blood pressure</i>	
16 ²⁰ - 16 ⁴⁰	Podoskin Dmitry <i>RF Oscillators based on Piezoelectric Aluminium Nitride MEMS Resonators</i>	Glazova A. <i>System for remote monitoring of COPD patients using computer lung sound analysis</i>	

Wednesday, July 9th, 2014

Leibnizbau, LB 404	
08 ³⁰ - 09 ⁰⁰	Registration
VIP Plenary Session	
09 ⁰⁰ - 09 ²⁰	<p>MUSICAL OPENING Soloist Michael Recknagel, Music School Arnstadt-Ilmenau, E-Piano</p> <p>WELCOME ADDRESSES Vice Rector for education of the TU Ilmenau, and the Dean of the Faculty for Electrical Engineering and Information Technology</p>
09 ²⁰ - 10 ⁰⁰	<p>LAUDATORY SPEECH Professor Dr. Johannes Zentner, Leipzig University of Applied Sciences</p>
10 ⁰⁰ - 10 ²⁰	<p>PRESENTATION HANDOVER Certificate of honour to Prof. Igor N. Zhelbakov</p> <p>MUSICAL INTERMEZZO</p>
10 ²⁰ - 11 ⁰⁰	<p>ADDRESS OF LAUREATE Professor Dr. Dr.-Ing. E.h. Igor Nikolaevich Zhelbakov</p>
11 ⁰⁰ - 11 ⁴⁰	<p>TALK OF THE RECTOR Of the National Research University Moscow Power Engineering Institute Prof. Nikolai D. Rogalev</p> <p>MUSICAL INTERMEZZO</p>
11 ⁴⁰ - 12 ²⁰	<p>INVITED TALK: Prof. Ph.D. Erkki Lähderanta Lappeenranta University of Technology, Finland Co-operation with Russian Universities - benefits for both partners</p> <p>MUSICAL CLOSING</p>
12 ²⁰ - 13 ³⁰	<i>Lunch Break</i>
13 ³⁰ - 14 ²⁰	<p>INVITED TALK: Prof. Jun-Chih Chiao, IEEE-MTT Implantable wireless medical devices and systems</p>
14 ²⁰ - 15 ⁰⁰	<p>INVITED TALK: Prof. Georg Fischer, FAU Erlangen-Nürnberg Barrier free and mobile e-Health systems at the border between lifestyle and medical technology</p>
15 ⁰⁰ - 15 ²⁰	<i>Coffee Break</i>
15 ²⁰ - 16 ⁰⁰	<p>INVITED TALK: Prof. Valery Lunin, MEI Diagnostics: sensing, data processing, analysis and classification</p>
16 ⁰⁰ - 16 ⁴⁰	<p>INVITED TALK: Prof. Hannes Töpfer, TU Ilmenau Sensors and Sensor Systems for Condition Monitoring</p>
18 ⁰⁰ - 22 ⁰⁰	Conference Dinner

Thursday, July 10th, 2014

	Leibnizbau, Room: LB 404	Leibnizbau, Room: LB 404
08 ³⁰ - 09 ⁰⁰	Registration	
09 ⁰⁰ - 09 ⁴⁰	INVITED TALK: Prof. Matthias Hein, TU Ilmenau <i>Thuringian Centre for Innovation in Mobility</i>	
09 ⁴⁰ - 09 ²⁰	INVITED TALK: Prof. Vladimir Kutuzov, LETI <i>Modern trends in radar technology</i>	
10 ²⁰ - 10 ⁴⁰	<i>Coffee Break</i>	
10 ⁴⁰ - 11 ²⁰	INVITED TALK: Prof. Dmitry Kholdnyak, LETI <i>Advanced microwave devices using metamaterial transmission lines</i>	
11 ²⁰ - 11 ⁴⁰	INVITED TALK: Evgenia Subkova, LETI <i>Promotion of young engineering scientists at LETI</i>	
11 ⁴⁰ - 13 ⁰⁰	<i>Lunch Break</i>	
13 ⁰⁰ - 13 ²⁰	INVITED TALK: Prof. Giovanni Del Galdo, Fraunhofer IIS <i>Over-The-Air testing in Virtual Electromagnetic Environments (OTAinVEE): Ongoing Activities in Ilmenau</i>	
13 ²⁰ - 13 ⁴⁰	INVITED TALK: Klemens Brückner, TU Ilmenau <i>Multiphysical Design and Realization of Complex RF Circuits</i>	
13 ⁴⁰ - 14 ⁰⁰	<i>Coffee Break</i>	
	Session 13 – Electrical Engineering Chair:	Session 14 – Biomedical Engineering Chair: Jun.-Prof. Daniel Baumgarten
14 ⁰⁰ - 14 ²⁰	Silvia Krug, Jochen Seitz, Hannes Töpfer, Yulia Lapteva, Mikhail S. Kupriyanov <i>Simulation Tools for Wireless Sensor Network Evaluation in Vehicular Environments</i>	Jens Hauelsen <i>Influence of volume conductor modeling on source reconstruction in magnetoencephalography and electroencephalography</i>
14 ²⁰ - 14 ⁴⁰	S. S. Nalimova <i>Characterization and control of adsorption sites in metal oxide gas sensors</i>	Pustozarov E. <i>Mobile Informational Support System for Diabetes Patients</i>
14 ⁴⁰ - 15 ⁰⁰	Dmitry V. Makarov, Mikhail K. Tchobanou <i>Image Compression by using Tensor Approximation</i>	Ananieva A. <i>The technique for the noninvasive assessment of hematocrit level</i>
15 ⁰⁰ - 15 ²⁰	Tobias Scholz, Konstantin Porzig, Hartmut Brauer, Hannes Töpfer <i>Evaluation of Numerical Simulations for Pulsed Eddy Current Testing Applications</i>	Zahharova A. <i>Human respiration monitoring mobile system</i>
19 ⁰⁰ - 22 ⁰⁰	CAREER AND NETWORKING EVENT FOR YOUNG WOMEN IN RESEARCH DFG Research Unit MUSIK (organizer) Chances and Challenges of Women in Engineering Science	

Friday, July 11th, 2014

Leibnizbau, Room: LB 404	
08 ³⁰ - 09 ⁰⁰	Registration
09 ⁰⁰ - 09 ⁴⁰	INVITED TALK: Prof. Andreas Mitschele-Thiel, TU Ilmenau International Graduate School on Mobile Communications
09 ⁴⁰ - 10 ²⁰	INVITED TALK: IMMS, Prof. Dr. Ralf Sommer <i>Systematic Design Strategies for Multi-physical Sensor Systems</i>
10 ²⁰ - 11 ⁰⁰	<i>Coffee Break</i>
11 ⁰⁰ - 11 ⁴⁰	INVITED TALK: Jun.-Prof. Detlef Streitferdt, TU Ilmenau <i>Main Project Artifact: Software Architecture</i>
11 ⁴⁰ - 12 ⁰⁰	Conference Closing STUDENT AWARD
12 ⁰⁰ - 13 ⁰⁰	Lunch Break
13 ⁰⁰ - 14 ²⁰	Meeting Point: Mensa Foyer VISITS TO RESEARCH LABORATORIES <ul style="list-style-type: none"> • Center of Micro- and Nanotechnologies (ZMN) • Virtual Road, Simulation and Test Facility (VISTA) as part of the Thuringian Center of Innovation in Mobility (ThIMo) • Anechoic Chamber for Antenna Measurements • Institute for Microelectronics and Mechatronics Systems (IMMS) • Facility for Over-the-Air Research and Testing (FORTE)

4 Summer School 7th July – 18th July 2014

This years theme: "Your research proposal"

As a young researcher you have the great opportunity to visit the SPITSE symposium from July the 7th to the 11th. For the preparation of your visit select the presentations you attend carefully. After attending the presentations at the symposium you can discuss the presented as well as your own ideas together with the experienced researchers. This gives you a very good overview of the current hot topics, the challenges and the available solutions.

In the second week of your summer school you deepen and enhance your knowledge with special summer school lectures and you start working on your own research proposal which you will present at the end of the summer school.

Deadlines:

- **Sign up your team at the SPITSE registration desk the latest by Thursday 14⁰⁰**
- Submission of 1st draft on Friday, July 11th 2014, 14:00 (via E-Mail or at the registration desk)
- Final Presentation on Thursday, July 17th starting from 14⁰⁰ ...

4.1 Your Tasks

Each summer school attendee should read and fulfill the following assignment as part of the summer school in Ilmenau.

Assignment

1. Carefully follow the presentations given in the first week, at the SPITSE symposium. You are a researcher and you should be able to understand and evaluate different scientific ideas and evenly important you should identify gaps that need (your) scientific attention.
2. Discuss your findings as result of the presentations of the first week with colleagues and gather in teams of three researchers with interest in the same topic. (→ don't forget your business cards)
3. Further discuss your research proposal idea and submit a very first draft (~ half a page) to the registration desk before Friday, July 11th @ 14⁰⁰. Some hints ...
 1. Prove your innovative thinking, teamwork and pro-active behaviour
 2. Show visionary thinking, be application oriented, use teamwork, and develop your communication skills
 3. Name the key persons who are important for your research idea (e. g. out of the researchers you have met, people who work in the same area, research centers, ...)
→ You should work on a *researchers network* (e. g. based on the SPITSE attendees) as part of your final presentation

4. Attend the special lectures of the summer school
5. Work on the final presentation of your research proposal. The best proposal will be awarded!
6. Presentation of results. Each group will present the research proposal in front of a researcher panel.
7. Best proposal award ceremony

4.2 Your Benefit

As result of your visit and the finalization of the above described assignment you will ...

- get to know renowned researchers at the symposium
- get feedback for your own research idea
- get into contact with other students and researchers to get a chance to form a research group to implement the research proposal in reality (we are positive that you continue with your proposal and your new researcher network in the upcoming months and year after the SPITSE symposium)
- earn presentation skills
- have the opportunity to win the **Best Proposal Award – 500 €!**

4.3 Rules

- 9 days to work on your project proposal and its presentation
- Teams consist of 2 to 3 members
- Presentation must be based on at least 2 contributions at SPITSE
- Final evaluation (for the Best Proposal Award) will be based on
 1. **Novelty** of the idea
 2. **Content**: Clearly explain the problem and the solution achieved by combining the results of referenced conference papers. Emphasize the innovative steps.
 3. **Appropriateness**: The problem solved must fit the provided themes and should be up to date.
 4. **Feasibility**: The proposed idea should be application-oriented and its implementation feasible. Eventually you can even show a little prototype?
 5. **Clarity of the presentation**: The figures must be legible and clear, with proper size and coloring. The presentation must be concise

4.4 Summer School Schedule

Day	Time	Humboldtbau, Room HU 202
Monday July 14 th	09 ⁰⁰ - 10 ³⁰	Lecture: Prof. Seitz <i>Protocols and services of mobile communication</i>
	11 ⁰⁰ - 12 ³⁰	Lecture: Prof. Töpfer <i>Applications of Superconductive Electromagnetic Sensors</i>
	12 ³⁰ - 14 ⁰⁰	Lunch Break
	14 ⁰⁰ - 15 ³⁰	Lecture: Jun.-Prof. Streitferdt <i>Product Line Development</i>
	15 ³⁰ - 17 ³⁰	PREPARATION OF STUDENT PRESENTATIONS
Tuesday July 15 th	09 ⁰⁰ - 10 ³⁰	Lecture: Dipl.-Ing. Brückner, Dipl.-Ing. (FH) Nowak, Prof. Müller <i>Microelectromechanical Systems for RF Applications</i>
	11 ⁰⁰ - 12 ³⁰	Lecture: Dipl.-Ing. Brückner, Dipl.-Ing. (FH) Nowak, Prof. Müller <i>Microelectromechanical Systems for RF Applications</i>
	12 ³⁰ - 14 ⁰⁰	Lunch Break
	14 ⁰⁰ - 15 ³⁰	Lecture: Dr. Bornkessel <i>Human RF EMF exposure to mobile phone base stations – Measurement results, exposure limits and present status of research</i>
	15 ³⁰ - 17 ³⁰	PREPARATION OF STUDENT PRESENTATIONS
Wednesday July 16 th	09 ⁰⁰ - 10 ³⁰	Lecture: Prof. Del Galdo <i>Architectures and Signal Processing for Efficient Measurements</i>
	11 ⁰⁰ - 12 ³⁰	Lecture: Prof. Haueisen <i>Dry electrodes for electroencephalography</i>
	12 ³⁰ - 14 ⁰⁰	Lunch Break
	14 ⁰⁰ - 15 ³⁰	Social Challenge Event
Thursday July 17 th	09 ⁰⁰ - 10 ³⁰	Lecture: Prof. Mitschele-Thiel <i>Self-organized Mobile Communication Systems for Disaster Scenarios</i>
	11 ⁰⁰ - 12 ³⁰	Lecture: Dr. Brauer <i>Nondestructive Evaluation Using the Lorentz Force Eddy Current Testing Technique</i>
	12 ³⁰ - 14 ⁰⁰	Lunch Break
	14 ⁰⁰ - 17 ⁰⁰	Student Presentations Proposal Award
Friday July 18 th	09 ⁰⁰ - 10 ³⁰	Visit Research Laboratories
	11 ⁰⁰ - 12 ³⁰	Visit Research Laboratories
	12 ³⁰ - 14 ⁰⁰	Lunch Break

5 Venue

