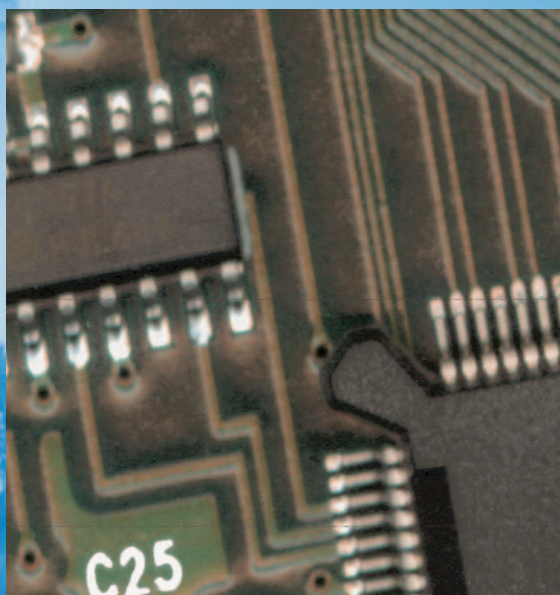


# FINAL PROGRAMME

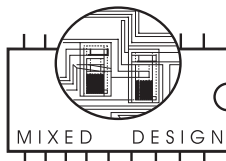
21<sup>st</sup> International Conference



# MIXDES 2014

MIXED DESIGN OF INTEGRATED  
CIRCUITS AND SYSTEMS

Lublin, Poland  
19 - 21 June 2014



# 21<sup>st</sup> International Conference MIXED DESIGN OF INTEGRATED CIRCUITS AND SYSTEMS Lublin, Poland 19 - 21 June 2014

## MIXDES 2014 Timetable

Day 1	Thursday, June 19 <sup>th</sup> , 2014		
	Room A	Room B	Room C
12:15	Conference Opening		
12:30	Plenary Session I		
13:00	Lunch		
14:00	Vendor Presentation (National Instruments Corporation)		
14:30	Session 1 (Part 1)	Special Session I (Part 1)	NI Workshop (Part 1)
16:10	Coffee Break		
16:20	Session 1 (Part 2)	Special Session I (Part 2)	NI Workshop (Part 2)
17:00	IEEE, URSI & PAN Meeting		
19:00	Welcome Party		

Day 2	Friday, June 20 <sup>th</sup> , 2014		
	Room A	Room B	Room C
8:15	Plenary Session II		
9:20	Session 1 (Part 3)	Session 2 & Session 6	Session 5
11:00	Coffee Break		
11:15	Session 1 (Part 4)	Session 3 (Part 1)	Special Session II
13:30	Lunch		
14:30	Tourist Activities		

Day 3	Saturday, June 21 <sup>st</sup> , 2014		
	Room A	Room B	Room C
8:15	Plenary Session III		
9:20	Session 1 (Part 5)	Session 3 (Part 2) & Session 8	Session 7 (Part 1)
11:00	Coffee Break		
11:15	Session 1 (Part 6) & Session 4	Session 9	Session 7 (Part 2)
13:00	Lunch		
14:00	Introduction to Poster Session		
15:30	Coffee Break during Poster Session		
19:00	Awards Ceremony		

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**FROM THE ORGANISING COMMITTEE**

Welcome to the 21<sup>st</sup> International Conference "Mixed Design of Integrated Circuits and Systems" – MIXDES 2014

We are very happy to welcome you to Lublin at the 21<sup>st</sup> MIXDES Conference "Mixed Design of Integrated Circuits and Systems". As you probably know, we were planning to meet in Lviv but unfortunately we had to change the location. We hope that the people of Ukraine will overcome the difficulties and soon it will be possible to realize our original plans.

The MIXDES conference is one of the largest in the Central Europe in the field, encompassing interdisciplinary research in design, modelling, simulation, testing and manufacturing in various areas, such as micro- and nanoelectronics, semiconductors, sensors, actuators, biomedical applications and power devices. All submissions from 19 countries were reviewed and scored by members of the Programme Committee to put together a high quality technical programme of 106 papers organised in oral and poster presentations.

In addition to the regular programme, there will be five invited papers:

- *60 Years of Polish Transistors*  
Jerzy Puktorak (Institute of Electron Technology, Poland)
- *A Brief Overview of the Challenges of the Multicore Roadmap*  
Jacques Henri Collet (LAAS - CNRS, France)
- *Magnetic Tunnel Junctions for Future Memory and Logic-in-Memory Applications*  
Viktor Sverdlov (Technische Universitaet Wien, Austria) et al.
- *Optofluidic Photonic Liquid Crystal Fibers*  
Tomasz R. Woliński (Warsaw University of Technology, Poland)
- *Ultra Fast X-ray Detection Systems in Nanometer and 3D Technologies*  
Paweł Gryboś (AGH University of Science and Technology, Poland) et al.

The program of MIXDES 2014 includes also two special sessions:

- *Compact Modeling Support for Heterogeneous Systems*  
organised by Daniel Tomaszewski (Institute of Electron Technology, Poland) and Władysław Grabiński (GMC Suisse, Switzerland)
- *Modeling and Simulation of MEMS for Educational Purposes*  
organised by Michał Szermer (Lodz University of Technology, Poland)

We would like to take this opportunity to thank many individuals, especially the reviewers, who have worked so hard to make this meeting happen. We would like to welcome prof. Paweł Gryboś and prof. Witold Pleskacz as members of the Programme Committee.

We would like to attract your attention to the fact, that this year the conference begins at the day of Corpus Christi, so the opening of the conference is postponed to 12 o'clock to enable the conference participants to celebrate the tradition.

We hope that you will enjoy your visit to Lublin.

Next year the MIXDES Conference will take place in a wonderful city of Toruń. See you next June in the home town of Nicolaus Copernicus.

Yours Sincerely,  
MIXDES 2014 Organising Committee

## ORGANISING COMMITTEE

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Prof. V. Teslyuk Lviv Polytechnic National University, Ukraine
- Prof. W. Kuźmicz Institute of Micro- and Optoelectronics,  
Warsaw University of Technology, Poland

## IN COOPERATION WITH

Poland Section IEEE - ED & CAS Chapter  
IEEE Ukraine Section (West) AP/ED/MTT/CPMT/SSC  
Section of Microelectronics and Section of Signals, Electronic Circuits and Systems  
of the Committee of Electronics and Telecommunication  
of the Polish Academy of Sciences  
Commission of Electronics and Photonics  
of Polish National Committee of International Union of Radio Science - URSI

## SUPPORTED BY

National Instruments Corporation



**IEEE**



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Prof. A. Rybarczyk	Poznan University of Technology, Poland
Dr. J.-M. Sallese	Swiss Federal Institute of Technology, Switzerland
Prof. D. Sankowski	Lodz University of Technology, Poland
Prof. N. Stojadinović	University of Niš, Serbia
Prof. V. Székely	Technical University of Budapest, Hungary
Prof. T. Szmuc	AGH University of Science and Technology, Poland
Prof. G. Szymański	Poznan University of Technology, Poland
Prof. M. Tadeusiewicz	Lodz University of Technology, Poland
Dr. D. Tomaszewski	Institute of Electron Technology, Warsaw, Poland
Dr. P. Tounsi	INSA de Toulouse, France
Dr. M. Turowski	Robust Chip Inc., USA
Prof. R. Ubar	Tallinn Technical University, Estonia
Prof. G. Wachutka	Technische Universitaet Muenchen, Germany
Prof. K. Wawryn	Technical University of Koszalin, Poland
Prof. B. Więcek	Lodz University of Technology, Poland
Prof. S. Yoshitomi	Toshiba Corporation, Japan
Prof. J. Zarębski	Gdynia Maritime Academy, Poland
Prof. M. Zubert	Lodz University of Technology, Poland

## MAIN TOPICS

- 1. Design of Integrated Circuits and Microsystems**  
Design methodologies. Digital and analog synthesis. Hardware-software codesign. Reconfigurable hardware. Hardware description languages. Intellectual property-based design. Design reuse.
- 2. Thermal Issues in Microelectronics**  
Thermal and electro-thermal modelling, simulation methods and tools. Thermal mapping. Thermal protection circuits.
- 3. Analysis and Modelling of ICs and Microsystems**  
Simulation methods and algorithms. Behavioural modelling with VHDL-AMS and other advanced modelling languages. Microsystems modelling. Model reduction. Parameter identification.
- 4. Microelectronics Technology and Packaging**  
New microelectronic technologies. Packaging. Sensors and actuators.
- 5. Testing and Reliability**  
Design for testability and manufacturability. Measurement instruments and techniques.

- 6. Power Electronics**  
Design, manufacturing, and simulation of power semiconductor devices. Hybrid and monolithic Smart Power circuits. Power integration.
- 7. Signal Processing**  
Digital and analog filters, telecommunication circuits. Neural networks. Artificial intelligence. Fuzzy logic. Low voltage and low power solutions.
- 8. Embedded Systems**  
Design, verification and applications.
- 9. Medical Applications**  
Medical and biotechnology applications. Thermography in medicine.
- 10. Student Projects**

## CONFERENCE CENTER

The conference will take place in:

### Hotel Europa

Krakowskie Przedmieście 29

20-002 Lublin, Poland

Tel. +48 81 535 03 03, Fax. +48 81 535 03 04

e-mail: [info@hoteleuropa.pl](mailto:info@hoteleuropa.pl)

www: <http://www.hoteleuropa.pl/home/jezyk/en>

## ACCOMMODATION

For your stay in Lublin, we can recommend the following hotels:

- Hotel Europa (conference site)  
Lublin, Krakowskie Przedmieście 29  
Room reservations: tel. +48 81 535 03 03, email: [rezerwacja@hoteleuropa.pl](mailto:rezerwacja@hoteleuropa.pl)
- Hotel Lublinianka (240 m from the conference site)  
Lublin, Krakowskie Przedmieście 56  
Room reservations: [grandhotel@lublinianka.com](mailto:grandhotel@lublinianka.com)
- Hotel Ilan (1.5 km from the conference site)  
Lublin, ul. Lubartowska 85  
Room reservations: tel. +48 81 745 03 47, email: [recepca@hotelilan.pl](mailto:recepca@hotelilan.pl)
- Hotel Campanile (1 km from the conference site)  
Lublin, ul. Lubomelska 14/16  
Room reservations: tel. +48 81 531 84 00, email [lublin@campanile.com](mailto:lublin@campanile.com)
- Hotel Huzar (2.3 km from the conference site)  
Lublin, ul. Spadochroniarzy 9  
Room reservations: tel. +48 81 533 05 36, email: [huzar@hotelewam.pl](mailto:huzar@hotelewam.pl)

## REGISTRATION

The standard conference registration fee includes the admission to the conference, a copy of the Book of Abstracts, Conference Proceedings and other conference materials, tourist activities, all lunches, the welcome party, the banquet, coffee and tea during the breaks. To encourage students to participate in the Conference, the student registration fee is available (welcome party and banquet not included).

The standard registration fee is 380 € or 1600 Złoty. However, the sponsorship allowed organisers to cover part of the fee for IEEE members. For details, please consult the price policy on the Conference web site.

The Book of Abstract and other conference materials will be distributed to participants at the registration desk. The Conference Proceedings CD will be distributed to the participants after the conference. The hardcopy of Conference Proceedings may be ordered during the conference registration at special discount price.

The registration desk will be located in the conference center. It will be working during the following hours:

18 June (Wednesday)	18:30 – 20:00 h
19 June (Thursday)	10:30 – 13:00 h, 14:00 – 17:00 h
20 June (Friday)	08:00 – 12:00 h
21 June (Saturday)	08:00 – 10:00 h, 14:00 – 18:00 h

## GENERAL INFORMATION AND INQUIRIES

Dr. Mariusz Orlikowski

Lodz University of Technology

Department of Microelectronics and Computer Science

ul. Wólczańska 221/223 (building B18), 90-924 Łódź, Poland

e-mail: [mixdes2014@dmcs.p.lodz.pl](mailto:mixdes2014@dmcs.p.lodz.pl)

tel.: +48 (0) 604397239

www: <http://www.mixdes.org>

fax: +48 (0) 426360327

## THE CITY OF LUBLIN

Lublin is the largest city east of the Vistula with the population of about 400000 inhabitants. In 1474 Lublin become the administrative centre and a capital of voivodship. It is a historic town with numerous monuments of architecture, a unique atmosphere and a very picturesque location. Among its most precious showpieces are the buildings on the castle hill with a brick Romanesque tower dating back to the 13th century. Under the reign of King Casimir the Great a Gothic caste was built



here along with the Holy Trinity Royal Chapel. In 1418 King Jagiełło had the interior of the chapel covered with amazing frescoes, considered the finest medieval wall paintings in Poland. In 1569 the Lublin Union was signed in the Lublin Castle uniting Poland and Lithuania into a single political entity.

Lublin offers a large canvas of outstanding monuments and tourist attractions: the Old Town of Lublin with the Grodzka Gate, the Krakowska Gate and the Round Tower date back to the times of King Casimirus the Great. In Lublin there are sacral monuments, such as baroque Jesuit college whose interior is ornamented with illusionistic polychromy and Dominican church with its chapels.

Lublin is the city rich in scholarly and artistic traditions. In Lublin Biernat of Lublin, Jan Kochanowski, Wincenty Pol, Jan of Lublin and also Henryk Wieniawski worked and created. There are five institutions of higher education: the oldest of them is the John Paul II Catholic University of Lublin and the largest Marie Curie-Skłodowska University.

Some others museums are worth visiting: the History of Lublin Museum, the Town Hall and Crown Tribunal History, Museum of Martyrology "Under the Clock" and Martyrology Museum at Majdanek.

The Lublin Region has also places worth seeing: a palace and park complex in Kozłówka, a renaissance little town of Kazimierz Dolny, a health spa Nałęczów with villas of importance and interesting local history, situated in the picturesque landscape of the region.

## **TOURIST ACTIVITIES**

The guided tour around Lublin will start at 14:30 in front of the conference site. We will walk to the most prominent tourist attractions:

- The Holy Trinity Royal Chapel
- The Lublin Castle
- The Dominican church
- The Archcathedral of St. John the Baptist

## **IMPORTANT PHONE NUMBERS**

Ambulance	999	Fire Brigade	998
Police	997	Emergency phone	112

## BANKING

Foreign exchange facilities are available at major airports and at larger hotels, as well as in many private offices, called “Kantor”. Credit cards can be used in many places such as banks, hotels, car-rental offices, restaurants, and large shops. Approximate currency exchange rate: 1 € = 4.1 zloty, 1 \$ = 3.0 zloty (for the up-to-date information refer to <http://www.nbp.pl>).

### Credit cards:

Visa, American Express, MasterCard are the most common cards. However, other cards might be accepted.

### Currency:

Generally, everywhere in Poland you pay in Polish zlotys. The currency units are zloty (zł, PLN) and grosz (gr), 1 zł = 100 gr. The Polish zloty is a fully convertible currency internally in Poland.

## TRANSPORT

Lublin can be reached by train or road, you can also use Lublin-Świdnik Airport. There are also direct trains from Warszawa Centralna Station to Lublin Station, as shown below:

Number	62201	72111	83104	52102	53104	12010	82100	52100	52112
Runs	daily	Mo-Sat	daily	daily	daily	daily	daily	daily	daily
Train type	TLK fast	IR fast	TLK fast	TLK fast	TLK fast	TLK fast	TLK fast	TLK fast	TLK fast
Warszawa	6:31	10:10	10:51	12:52	14:58	16:50	17:50	19:03	21:05
Lublin	9:17	12:32	13:14	15:13	17:11	19:12	20:03	21:20	23:29

Planes are also available from Gdańsk, Wrocław, Milan, Oslo, Rome, and London (Stansted or Luton) to Lublin-Świdnik Airport (see <http://www.airport.lublin.pl/en/> for details).

The Lublin main station can be reached from airport by train (5 PLN, runs about 15 minutes) or by TAXI.

To travel Lublin you can use the city public transport. You can use single fare ticket, if your journey can be done by one trolleybus or bus. Time-limited tickets are also available – these are valid for the limited period of time, you can change bus or trolleybus unlimited number of times.

Validity period	Price of ticket	
	Standard lines	Night lines
Single fare	3.20 PLN	5.80 PLN
30 min	2.80 PLN	2.80 PLN
90 min	4.00 PLN	8.20 PLN
6 h	7.00 PLN	
24 h	13.00 PLN	
72 h	22.00 PLN	

Single fare ticket can be bought only from the driver. 30 min ticket is valid for 30 minutes from validation for unlimited travel or valid regardless of the journey time in the vehicle it is validated on the entire route, i.e. between the start and termination stops.

The main conference building (EUROPA HOTEL) is about 30 minutes by bus from the Lublin train station. One should take the bus number 13 (direction CHOINY), and leave it at PLAC LITEWSKI stop.

## **PROGRAMME OF THE CONFERENCE**

The programme of the MIXDES 2014 Conference will include oral presentations of contributed and invited papers, special sessions and poster session.

Except for the plenary and poster sessions, the programme of the conference will be divided into three parallel sessions, in accordance with discussed topics. The language of the Conference is English, neither translation nor interpretation will be provided.

### **The time of oral presentations:**

- for invited papers: 20-25 min. for presentation and 5-10 min. for questions,
- for regular papers: 15 min. for presentation and 5 min. for questions.

### **Poster presentations:**

The authors presenting their papers at the poster sessions will have at their disposal an A0 panel. Adhesive tape and scissors will be provided by organisers. On the third conference day after lunch, an introduction to poster session is planned, in which the authors are asked to present their work very shortly in front of the audience: 2-3 slides, within 1-2 minutes. The questions and discussions will be continued at the poster panels.

## **MIXDES 2014**

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### **Lunches:**

Lunches will be served each day at the conference center at the times indicated in the programme.

### **Welcome Party and Conference Banquet:**

The Welcome Party will be organised on Thursday (the first conference day) at 19:00. The Conference Banquet and the Awards Ceremony will take place on Saturday at 19:00.

The Welcome Party and the Conference Banquet are not included in the student registration fee.

## **WEATHER**

June in Poland is generally sunny, with some showers, the temperatures can be typically 15 to 28 °C during days. During nights, the temperature can go down to 8-10 °C. So, we can suggest you to bring summer clothes, with a quite warm jacket or pullover, and an umbrella.

**Time****Room A****12:15 Conference Opening**

Chairmen: Prof. W. Kuźmicz and Prof. A. Napieralski

**12:30 Plenary Session I**

Chairman: Prof. A. Napieralski

*Ultra Fast X-ray Detection Systems in Nanometer and 3D Technologies*

P. Gryboś, A. Drozd, G. Deptuch, K. Kasiński, R. Kłeczek, P. Kmon, P. Maj, P. Otfinowski, J. Rauza, R. Szczygieł, T. Satława, M. Żołądź (AGH Univ. of Science and Techn., Poland)

**13:00 Lunch****14:00 Vendor Presentation: National Instruments**

Chairman: Prof. A. Napieralski

*The Process of Testing an Electronics System - in Teaching, Research and Industry*

M. Antonik (National Instruments Eastern Europe, Poland)

**14:30 Session 1 (Part 1): Design of Integrated Circuits and Microsystems**

Chairman: Prof. W. Pleskacz

*2.5 Gbit/s Compact Transimpedance Amplifier Using Active Inductor in 130 nm CMOS Technology*

M. Atef, D. Abd-elrahman (Assiut Univ., Egypt)

*A Fast Power Efficient Equalization-Based Digital Background Calibration Technique for Pipelined ADC*

N. Abou-El-Kheir, M.E. Khedr (Arab Academy for Science and Techn., Egypt), M. Abbas (Assiut Univ., Egypt)

*A Hybrid Current-Mode Passive Second-Order Continuous-Time  $\Sigma\Delta$  Modulator*

P. Śniatała, M. Naumowicz (Poznan Univ. of Techn., Poland), J.L.A. de Melo, N. Paulino, J. Goes (Univ. Nova de Lisboa, Portugal)

*A Low Power Quadrature Class D LC Oscillator with 0.4 V Supply*

J. Oliveira, L. Oliveira, A. Bispo, F. Quendera, R. Madeira (Univ. Nova de Lisboa, Portugal)

*A Low-Voltage LNA and Current Mode Mixer Design for Energy Harvesting Sensor Node (student project)*

L. Oliveira, J. Oliveira, N. Mancelos, J. Correia (Univ. Nova de Lisboa, Portugal)

## MIXDES 2014

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**16:10 Coffee Break**

**16:20 Session 1 (Part 2): Design of Integrated Circuits and Microsystems**

Chairman: Prof. A. Pfitzner

*A Novel Method in Fractional Synthesizers for a Drastic Decrease in Lock Time*

M. Ghasemzadeh, A. Akbari, N. Mohabbatian, K. Hadidi, A. Khoei (Urmia Univ., Iran)

*A Novel Mixed-Signal Digital CMOS Fuzzy Logic Controller in Current Mode*

M. Ghasemzadeh, A. Akbari, A. Soltani, A. Khoei, K. Hadidi (Urmia Univ., Iran)

*A Widely Tunable Narrowband Balun-LNA with Integrated Filtering*

M. Fernandes, L. Oliveira, J. Oliveira (Univ. Nova de Lisboa, Portugal)

*Regulated Common-Gate Transimpedance Amplifier for Radiation Detectors and Modern Receivers (student project)*

J. Oliveira, L. Oliveira, D. Dias, F. Melo (Univ. Nova de Lisboa, Portugal)

**19:00 Welcome Party**

**Time****Room B****14:30 Special Session I (Part 1): Compact Modeling Support for Heterogeneous Systems**

Chairmen: Prof. J. Pultorak and Dr. D. Tomaszewski

*A Fully Explicit Static Model for DG JLFET Valid in All Modes of Operation*  
A. Yesayan (NAS Armenia, Armenia), F. Prégaldiny (ICube / Télécom Physique Strasbourg, France)

*Improved Analytical Potential Modeling in Double-Gate Tunnel-FETs*  
M. Gräf, T. Holtij, F. Hain, A. Kloes (Tech. Hochschule Mittelhessen, Germany), B. Iniguez (Univ. Rovira i Virgili, Spain)

*Compact Modeling of Homojunction Tunnel FETs*  
A. Biswas, N. Dagtekin, L. De Michielis, A. Bazigos, W. Grabiński, A. Ionescu (EPFL NanoLab, Switzerland)

*Compact Modeling of Memristive IMP Gates for Reliable Stateful Logic Design*  
H. Mahmoudi, T. Windbacher, V. Sverdlov, S. Selberherr (Tech. Univ. Wien, Austria)

*Using an Integrated Inductor Model in Qucs*  
M.H. Fino (Univ. Nova de Lisboa, Portugal)

**16:10 Coffee Break****16:20 Special Session I (Part 2): Compact Modeling Support for Heterogeneous Systems**

Chairman: Prof. J. Pultorak and Dr. W. Grabiński

*Capacitors in Heterogeneous Systems-consequences on Compact Modeling*  
B. Landgraf, B. Ankele (Infineon Technologies, Austria)

*Standardizing the Compact Model Developments for Emerging Transistors*  
L. Zhang, M. Cheralathan, A. Zhang, R. Salahuddin, M. Chan (The Hong Kong Univ. of Science and Techn., Hong Kong)

*A Simple Multi-Purpose Method for Compact Model Evaluation*  
D. Tomaszewski, G. Głuszko, M. Zaborowski, J. Malesińska, K. Kucharski (Institute of Electron Techn., Poland)

**17:00 IEEE, URSI & PAN Meeting****19:00 Welcome Party**

# MIXDES 2014

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**Time**

**Room C**

14:30 NI Workshop (Part 1): Reconfigurable, Modular Measurement Systems

16:10 Coffee Break

16:20 NI Workshop (Part 2): Reconfigurable, Modular Measurement Systems

19:00 Welcome Party



**Time****Room A****08:15 Plenary Session II**

Chairman: Prof. W. Kuźmicz

*Magnetic Tunnel Junctions for Future Memory and Logic-in-Memory Applications*  
V. Sverdlov, H. Mahmoudi, A. Makarov, S. Selberherr (Tech. Univ. Wien, Austria)

*Optofluidic Photonic Liquid Crystal Fibers*  
T.R. Woliński (Warsaw Univ. of Techn., Poland)

**09:20 Session 1 (Part 3): Design of Integrated Circuits and Microsystems**

Chairman: Prof. P. Grybóś

*A Novel Fast Glitchless 7-3 Counter with a New Structure*  
M. Ghasemzadeh, N. Mohabbatian, A. Akbari, K. Hadidi, A. Khoei (Urmia Univ., Iran)

*A Novel Mixed-Signal Digital Voltage Mode CMOS Fuzzy Logic Controller in 0.18  $\mu\text{m}$  Technology*  
M. Ghasemzadeh, A. Akbari, A. Khoei, K. Hadidi (Urmia Univ., Iran)

*A Self-Calibration Technique for Fast-Switching Frequency-Hopped UWB Synthesis*  
A. Ojani, B. Mesgarzadeh, A. Alvandpour (Linköping Univ., Sweden)

*Design and Simulations of the 10-bit SARADC in Novel Sub-micron Technology 200 nm SOI CMOS*  
R. Dasgupta, S. Bugiel, S. Głąb, M. Idzik, J. Moron (AGH Univ. of Science and Techn., Poland), P. Kapusta (Inst. of Nuclear Physics, Polish Academy of Sciences, Poland)

*Design of a Reference Voltage Buffer for a 10-bit 1-MS/s SAR ADC*  
P. Harikumar (Linköping Univ., Sweden), P. Angelov, R. Häggglund (AnaCatum AB, Linköping, Sweden)

**11:00 Coffee Break****11:15 Session 1 (Part 4): Design of Integrated Circuits and Microsystems**

Chairman: Prof. Z. Ciota

*Design of Broad-band Power Amplifiers by Means of an Impedance Transforming Lossy Equalizer*  
F. Centurelli (Sapienza Univ. of Rome, Italy), M. Djukanovic (Univ. Montenegro, Montenegro), G. Scotti, P. Tommasino, A. Trifiletti (Sapienza Univ. of Rome, Italy)

*Design of the Reset and Calibration Circuits in a Dual Stage Charge Sensitive Processing Chain Based on Time-over-Threshold Technique for Tracking Applications*

K. Kasiński, R. Kłeczek (AGH Univ. of Science and Techn., Poland)

*Design of the Ultrafast LVDS I/O Interface in 40 nm CMOS Process*

T. Satława, A. Drozd, P. Kmon (AGH Univ. of Science and Techn., Poland)

*Development of Pixel Detector in Novel Sub-micron Technology SOI CMOS 200 nm*

S. Bugiel, R. Dasgupta, S. Głąb, M. Idzik (AGH Univ. of Science and Techn., Poland), P. Kapusta (Inst. of Nuclear Physics, Polish Academy of Sciences, Poland)

*Double Edge Class BD Hybrid DPWM Implementation Using Linearized LBDD Algorithm*

J. Jasielski, S. Kuta, W. Machowski, I. Brzozowski (AGH Univ. of Science and Techn., Poland), W. Kołodziejski (State Higher Vocational School in Tarnow, Poland)

**13:30 Lunch**

**14:30 Tourist Activities**

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<b>Time</b>	<b>Room B</b>
<b>09:20</b>	<b>Session 2 &amp; 6: Thermal Issues in Microelectronics &amp; Power Electronics</b> Chairman: Prof. A. Napieralski  <i>Convergence of Green's Function Heat Equation Solutions in Electronic Nanostructures</i> M. Janicki, M. Zubert, A. Napieralski (Lodz Univ. of Techn., Poland)  <i>Modelling Modern Processors Using FEM and Compact Model - a Comparative Study</i> M. Galicia, P. Zając, C. Maj, M. Szermer, A. Napieralski (Lodz Univ. of Techn., Poland)  <i>The Influence of the Mounting Manner of the Power LEDs on Its Thermal and Optical Parameters</i> K. Górecki, P. Ptak (Gdynia Maritime Univ., Poland)  <i>The Influence of the Selected Factors on Transient Thermal Impedance of Semiconductor Devices</i> K. Górecki, J. Zarębski (Gdynia Maritime Univ., Poland)  <i>Automatic Load-based MOSFET Segmentation for Switching DC-DC Converters</i> J. Windels, A. Monté, H. De Pauw, J. Doutreloigne (imec and Ghent University, Belgium)
<b>11:00</b>	<b>Coffee Break</b>
<b>11:15</b>	<b>Session 3 (Part 1): Analysis and Modelling of ICs and Microsystems</b> Chairman: Prof. W. Pleskacz  <i>Monte-Carlo and Transient-Noise Simulation Analysis of Rolling-Shutter Binary Readout Pixel Circuit</i> M. Jankowski (Lodz Univ. of Techn., Poland)  <i>Optimization Strategy of Numerical Simulations Applied to EPFL Substrate Model</i> C. Stefanucci, P. Buccella, M. Kayal, J.-M. Sallese (EPFL, Switzerland)  <i>Simulink Model of GFSK Demodulator Based on Time-to-Digital Converter</i> Ł. Wiechowski, K. Siwiec, J. Kopanski, W.A. Pleskacz (Warsaw Univ. of Techn., Poland)

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## MIXDES 2014

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*Spice Simulation of Substrate Minority Carriers Propagation with Equivalent Electrical Circuit*

P. Buccella, C. Stefanucci, J.-M. Sallese, M. Kayal (EPFL, Switzerland)

*Substrate Coupling Noise Considerations for Frequencies Up to 100 GHz*

V. Gerakis, A. Hatzopoulos (Aristotle Univ. Thessaloniki, Greece)

**13:30 Lunch**

**14:30 Tourist Activities**

<b>Time</b>	<b>Room C</b>
<b>09:20</b>	<p><b>Session 5: Testing and Reliability</b> Chairman: Prof. W. Pleskacz</p> <p><i>A Defect-Tolerant Multiplexer Using Differential Logic for FPGAs</i> A. Ben Dhia, M. Slimani, L. Naviner (Télécom ParisTech, France)</p> <p><i>Application of Avalanche Generators in Laboratory Measurements (student project)</i> M. Krupa, M. Gasior (CERN, Switzerland)</p> <p><i>COTS FPGA/SRAM Irradiations Using a Dedicated Testing Infrastructure for Characterisation of Large Component Batches</i> S. Uznanski, B. Todd, J. Walter, A. Vilar-Villanueva (CERN, Switzerland)</p> <p><i>Reliability-aware Delay Faults Evaluation of CMOS Flip-Flops</i> H. Cai, K. Liu, L. Naviner (Télécom Paristech, France)</p> <p><i>Sensor Reliability Evaluation Method in Multi-Sensor Control Systems</i> P. Łęczycycki, A. Andrzejczak, P. Pietrzak, B. Pękosiński, A. Napieralski (Lodz Univ. of Techn., Poland)</p>
<b>11:00</b>	<p><b>Coffee Break</b></p>
<b>11:15</b>	<p><b>Special Session II: Modeling and Simulation of MEMS for Educational Purposes</b> Chairmen: Prof. A. Napieralski and Dr. M. Szermer</p> <p><i>Microsystem Design Flow for SMEs</i> K. Hahn, I. Gradek (Univ. Siegen, Germany), H. Kremer (micro-parts GmbH&amp;Co. KG, Germany)</p> <p><i>Measurement Set-up for Lab-on-a-chip Fluorimetric Detection</i> I. Augustyniak, W. Kubicki, J. Dziuban (Wroclaw Univ. of Techn., Poland), D. Lizanetz, O. Matviykov, M. Lobur (Lviv Polytechnic National Univ., Ukraine)</p> <p><i>Multiscale Flow Model for Simulation of Biofluidic Mixtures in Lab-Chip Devices</i> O. Matviykov, M. Lobur (Lviv Polytechnic National Univ., Ukraine), A. Napieralski, M. Szermer, W. Zabierowski (Lodz Univ. of Techn., Poland), I. Augustyniak (Wroclaw Univ. of Techn., Poland)</p>

*Threshold Sensor for High-doses of Radiation*

I. Augustyniak, P. Kanpkiewicz, J. Dziuban (Wroclaw Univ. of Techn., Poland),  
M. Olszacki (National Centre for Nuclear Research, Poland), A. Tchkalov  
(National Tech. Univ. Ukraine "Kiev Polytechnic Institute", Ukraine), P. Pons  
(National Centre for Scientific Research, France)

*The Influence of Residual Stress Induced by Wafer Bonding on MEMS  
Membrane Properties*

C. Maj, P. Zając, M. Szermer, A. Napieralski (Lodz Univ. of Techn., Poland)

*Monte Carlo Modeling of Stiffness of MEMS Membrane*

P. Kosobutsky, M. Komarnutsky (Lviv National Polytechnic Univ., Ukraine),  
C. Maj, P. Zając, M. Szermer, W. Zabierowski (Lodz Univ. of Techn., Poland)

**13:30 Lunch**

**14:30 Tourist Activities**

**Time****Room A****08:15 Plenary Session III**

Chairmen: Prof. A. Napieralski and Dr. W. Grabiński

*A Brief Overview of the Challenges of the Multicore Roadmap*

J.H. Collet (LAAS-CNRS, France)

*60 Years of Polish BJT Transistors*

J. Pułtorak (Institute of Electron Techn., Poland)

**09:20 Session 1 (Part 5): Design of Integrated Circuits and Microsystems**

Chairman: Prof. A. Napieralski

*Experiments on two Clock Countermeasures Against Power Analysis Attacks*

F. Trotta, A. Trifiletti (Sapienza Univ. Rome, Italy), R. Menicocci (Fondazione Ugo Bordoni, Italy)

*High Gain Transimpedance Amplifier with Current Mirror Load*

M. Atef (Assiut Univ., Egypt)

*Implementation of the Bluetooth Receiver RF Front-End in the CMOS-RF 130 nm Technology*

D. Pietron, K. Siwiec, J. Kopanski, W.A. Pleskacz (Warsaw Univ. of Techn., Poland)

*Improving Co-design of Smart Sensor Front-Ends*

R. Świerczyński, K. Urbański, A. Wymysłowski (Wrocław Univ. of Techn., Poland)

**11:00 Coffee Break****11:15 Session 1 (Part 6) & 4: Design of Integrated Circuits and Microsystems & Microelectronics Technology and Packaging**

Chairman: Prof. A. Pfitzner

*Leakage Power Analysis Attacks Against a Bit Slice Implementation of the Serpent Block Cipher*

M. Alioto (Univ. Siena, Italy), S. Bongiovanni, G. Scotti, A. Trifiletti (Sapienza Univ. Rome, Italy)

*Mechatronic, Autonomous System for Movement Assessment of Horses - Preliminary Study*

P. Jozwiak (Poznan Univ. of Life Science, Poland), W. Kosek, P. Knapkiewicz (Wrocław Univ. of Techn., Poland)

*Seeking for Decomposition of a Boolean Function in the Reed-Müller Spectral Domain by Means of Permutation between Function Variables*

D. Polok, E. Hryniewicz (Silesian Univ. of Techn., Poland)

*CMRR Improvement for Multichannel Integrated Recording Circuits Processed in Submicron Technologies Dedicated to Neurobiology Experiments*

P. Kmon (AGH Univ. of Science and Techn., Poland)

*Fabrication and Characterization of Junctionless MOSFETs for Sensor Applications*

M. Zaborowski, D. Tomaszewski, J. Malesińska, P. Grabiec (Institute of Electron Techn., Poland)

### 13:00 Lunch

### 14:00 Introduction to Poster Session

Chairman: Prof. W. Kuźmicz

*A Highly Accurate Fuzzifier in Current Mode with Low Power Consumption*

A. Akbari, M. Ghasemzadeh, A. Khoei, K. Hadidi (Urmia Univ., Iran)

*A Novel Fast Glitchless 4-2 Compressor with a New Structure*

M. Ghasemzadeh, A. Akbari, K. Hadidi, A. Khoei (Urmia Univ., Iran)

*Active Balun-Based Wideband Differential LNA for Noise and Distortion Cancellation*

A. Zokaei, A. Amirabadi (Islamic Azad Univ., Iran), M. Ghasemzadeh (Urmia Univ., Iran)

*A Novel High-Speed 4-bit Carry Generator with a New Structure for Arithmetic Operations*

M. Ghasemzadeh, N. Mohabbatian, A. Akbari, K. Hadidi, A. Khoei (Urmia Univ., Iran)

*ACL and PCL of the Knee Joint in the Computer Diagnostics*

P. Zarychta (Silesian Univ. of Techn., Poland)

*Analog Behavioral Modeling for Age-Dependent Degradation of Complex Analog Circuits*

N. Heidmann, N. Hellwege, M. Taddiken, D. Peters-Drolshagen, S. Paul (Univ. Bremen, Germany)

*Analysis of Parameter-Based Temperature-Controlled Oscillator*

M. Frankiewicz, A. Kos (AGH Univ. of Science and Techn., Poland)



*Car Segmentation and Colour Recognition*

W. Więclawek, E. Piętka (Tech. Univ. Gliwice, Poland)

*Controlling Nonlinear Waveform - Case Study: Endpoint Detection in Plasma Etch Process (student project)*

S. Ben Zakour (Higher Inst. of Management, Tunisia), H. Taleb (Higher Inst. of Business Administration, Tunisia)

*Design and Properties of Nanostructured Thick-film Structures for Sensor Microelectronics*

H. Klym (Lviv Polytechnic National Univ., Ukraine), I. Hadzaman (Drohobych State Pedagogical Univ., Ukraine), I. Yurchak (Lviv Polytechnic National Univ., Ukraine)

*Design of a Reconfigurable Stimulator for Multichannel Integrated Systems Dedicated to Neurobiology Experiments*

P. Kmon (AGH Univ. of Science and Techn., Poland)

*Design of RISC Microcontroller with Dynamic Thermal Management Unit for Temperature-Controlled Oscillator*

M. Frankiewicz, P. Kocanda, R. Gał, A. Kos (AGH Univ. of Science and Techn., Poland)

*High-voltage Trapezoidal Waveform Generator with Edge-rounding Functionality Implementations*

A. Napieralski, M. Jankowski (Lodz Univ. of Techn., Poland)

*Hybrid Power System for Truck Recognition System*

B. Pękosławski, P. Pietrzak, A. Andrzejczak, P. Łęczycki, J. Topiłko, A. Napieralski (Lodz Univ. of Techn., Poland)

*Implementation of Artificial Intelligence Methods on Example of Cardiovascular Diseases Risk Stratification*

P. Marciniak, R. Kotas, M. Kamiński, Z. Ciota (Lodz Univ. of Techn., Poland)

*Linear-phase IIR Filter Design Based on FIR Prototype with Prescribed Group Delay*

J. Konopacki, K. Mościńska (Silesian Univ. of Techn., Poland)

*Low Voltage Area Efficient Current-Mode CMOS Bandgap Reference in Deep Submicron Technology*

R. Kłeczek, P. Gryboś (AGH Univ. of Science and Techn., Poland)

*Modeling and Simulation of a Lab-On-Chip for Micropollutants Detection*

S. Guiton (Strasbourg Univ. and Bürkert, France), A. Rezgui, M. Madec, C. Lallement (Strasbourg Univ., France), F. Rufi (Bürkert, France), J. Haiech (Strasbourg Univ., France)

*Modelling the Influence of Self-heating on Characteristics of IGBTs*

K. Górecki, P. Górecki (Gdynia Maritime Univ., Poland)

*Olfactory Event-Related Potentials Recordings Analysis Based on Modified EEG Registration System*

R. Kotas, Z. Ciota (Lodz Univ. of Techn., Poland)

*Operation of Ant Algorithm on Different Hardware Platforms (student project)*

A. Kozłowska (Nicolaus Copernicus Univ., Poland)

*Sizing of Photovoltaic Array for Low Feed-in Tariffs*

W. Marańda, M. Piotrowicz (Lodz Univ. of Techn., Poland)

*System-on-Chip in 180 nm Technology for Multi-Channel Wireless Recording of the Nerve Tissue Electrical Activity*

M. Żołądź, P. Kmon, P. Otfinowski, J. Rauza, R. Szczygieł, P. Gryboś (AGH Univ. of Science and Techn., Poland)

*The Integrated Selective Readout Amplifier for NMOS THz Detectors*

C. Kołaciński, D. Obrębski (Institute of Electron Techn., Poland)

*The Multi-Point Pressure and Temperature Measurement System for Aerodynamic Tunnel*

M. Zbieć, D. Obrębski (Institute of Electron Techn., Poland)

*Usefulness of VeSTIC Devices for Low-noise and Radiation Hard 3D Integrated Circuits*

M. Staniewski, A. Pfitzner (Warsaw Univ. of Techn., Poland)

*Using a Multimode Polymer Optical Fiber as a High Sensitivity Strain Sensor*

V. Varyshchuk, Y. Bobitski (Lviv Polytechnic National Univ., Ukraine), H. Poisel (Univ. of Applied Sciences "Georg Simon Ohm", Germany)

**15:30 Coffee Break during Poster Session**

**19:00 Awards Ceremony**

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<b>Time</b>	<b>Room B</b>
<b>09:20</b>	<b>Session 3 (Part 2) &amp; 8: Analysis and Modelling of ICs and Microsystems &amp; Embedded Systems</b> Chairman: Prof. A. Hatzopoulos  <i>Improved Compact Model of Vertical-Slit Field-Effect Transistor</i> A. Pfitzner (Warsaw Univ. of Techn., Poland)  <i>Small Signal Performance of VES-BJT</i> P. Mierzwiński (Warsaw Univ. of Techn., Poland)  <i>A Low-Power Embedded System for Visual Vehicle Detection</i> K. Grabowski, J. Cłapa (Lodz Univ. of Techn., Poland)  <i>Fast FPGA-based Frame Grabber for Digital Progressive Scan Image Sensors (student project)</i> M. Michałak, P. Sękalski, K. Grabowski, S. Izydorczyk (Lodz Univ. of Techn., Poland)  <i>Module Hardware Structure of Wireless Vehicle Weight Measurement System</i> A. Andrzejczak, P. Łęczycki, M. Makowski, P. Pietrzak, B. Pękosiński, A. Napieralski (Lodz Univ. of Techn., Poland)
<b>11:00</b>	<b>Coffee Break</b>
<b>11:15</b>	<b>Session 9: Medical Application</b> Chairman: Prof. Z. Ciota  <i>3D Face Geometry Analysis for Biometric Identification (student project)</i> J. Napieralski, M. Pastuszka, W. Sankowski (Lodz Univ. of Techn., Poland)  <i>CCO-Based Continuous-Time <math>\Delta\Sigma</math> Modulators for Electrochemical Sensor Arrays</i> A. Laifi, M.A. Al Abaji, R. Thewes (Tech. Univ. Berlin, Germany)  <i>Image Container Storage Format for Applications in Echocardiography Simulation</i> M. Borzęcki, B. Balcerzak, M. Kamiński, A. Napieralski (Lodz Univ. of Techn., Poland)  <i>Low-Cost Transesophageal Echocardiography Simulation Probe for Training Application in Medicine</i> B. Balcerzak, M. Borzęcki, M. Kamiński, A. Napieralski (Lodz Univ. of Techn., Poland)
<b>13:00</b>	<b>Lunch</b>

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### 09:20 Session 7 (Part 1): Signal Processing

Chairman: Prof. A. Rybarczyk

*Evaluation of Time-Scale Modification Methods for Audio Signals on Mobile Devices with Android OS*

M. Włodarczyk, P. Sękalski (Lodz Univ. of Techn., Poland)

*A Fisheye Distortion Correction Algorithm Optimized for Hardware Implementations*

J. Cłapa, H. Błasiński, K. Grabowski, P. Sękalski (Lodz Univ. of Techn., Poland)

*Architecture and Modeling of a Novel Optical Beamforming Network Suitable for Microwave Photonics Implementation*

G. Locatelli (Linkra Srl, Italy), P. Monsurrò, P. Tommasino, A. Trifiletti (Sapienza Univ. of Rome, Italy), A. Vannucci (Linkra Srl, Italy)

*Collective Acoustic Localization in a Network of Dual Channel Low Power Devices*

S. Astapov, J. Ehala, J.-S. Preden (Tallinn Univ. of Techn., Estonia)

*Efficient Implementation for Accurate Analysis of CED Circuits Against Multiple Faults*

T. An, K. Liu, H. Cai, L. Alves de Barros Naviner (Télécom ParisTech, France)

### 11:00 Coffee Break

### 11:15 Session 7 (Part 2): Signal Processing

Chairman: Prof. A. Rybarczyk

*Embedded System Implementation of Digital Fractional Filter Approximations for Control Applications*

A. Tepljakov, E. Petlenkov, J. Belikov (Tallinn Univ. of Techn., Estonia)

*Evaluation of Detection Methods in Non-cooperative Scenarios*

D. Kacperski, M. Włodarczyk, K. Grabowski (Lodz Univ. of Techn., Poland), J. Neves (Univ. Beira Interior, Portugal)

*A Comparative Study on Biometric Hand Identification*

P. Nowak (Lodz Univ. of Techn., Poland)

*Implementing Radar Algorithms on CUDA Hardware*

P. Monsurrò, A. Trifiletti, F. Lannutti (Sapienza Univ. Rome, Italy)

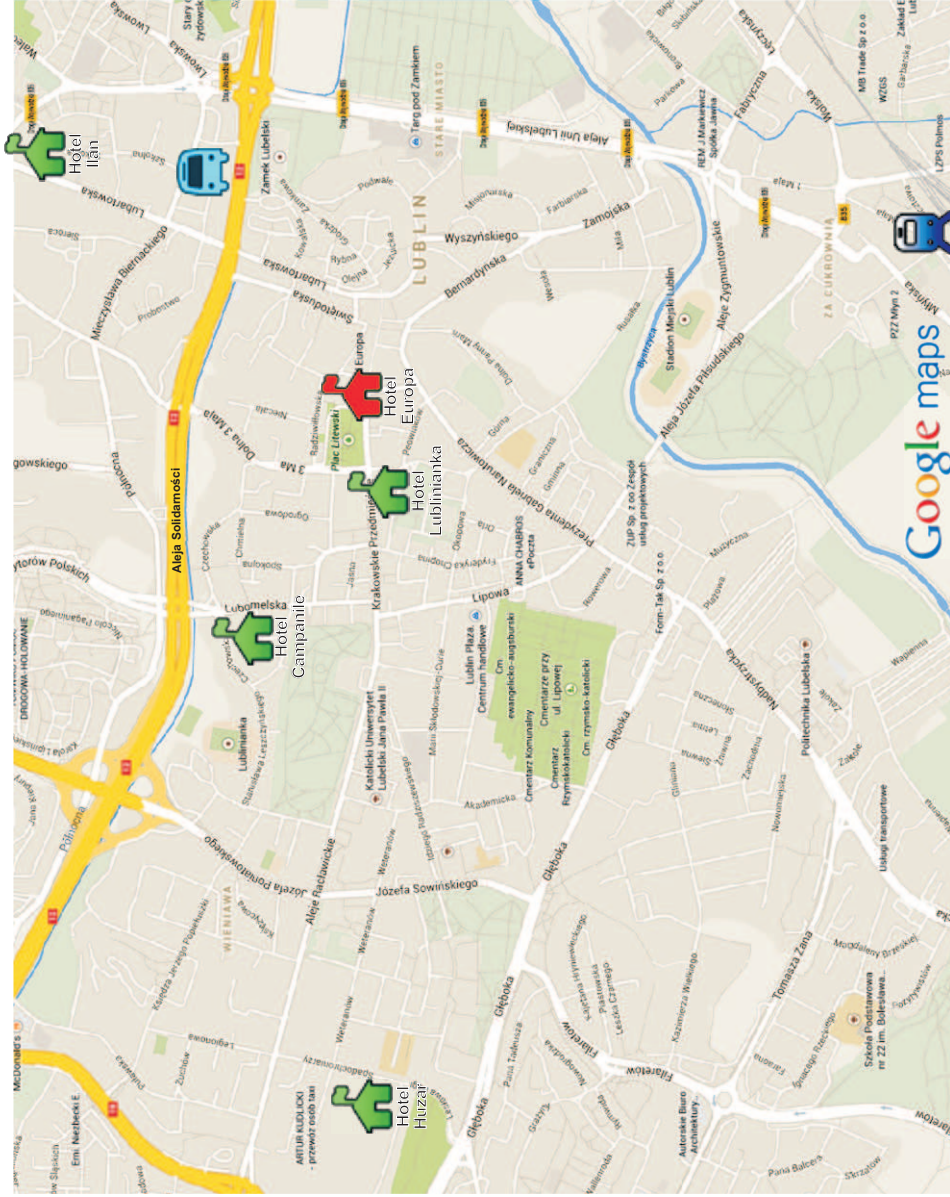
### 13:00 Lunch

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# Lublin City Map



  
**Conference Site**  
Hotel/Europa  
Krakowskie  
Przedmieście 29

  
**Hotels**

**Hotel Lublinianka**  
Krakowskie  
Przedmieście 56

**Hotel Ilan**  
Lubartowska 85

**Hotel Campanile**  
Lubumelska 14/16

**Hotel Huzar**  
Spadochroniarny 9

  
**Train Station**

  
**Bus Station**

~500m  