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	<i>Burçin Çakır and Sharad Malik</i>		

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Chair	Pablo Garcia del Valle , <i>École Polytechnique Fédérale de Lausanne (EPFL), CH</i>		
Co-Chair	Muhammad Shafique , <i>Karlsruhe Institute of Technology, DE</i>		
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5.3.2 9:00 - 9:30	Adaptively Tolerate Power-Gating-Induced Power/Ground Noise under Process Variations	483	<i>Zhe Wang, Xuan Wang, Jiang Xu, Xiaowen Wu, Zhehui Wang, Peng Yang, Luan H. K. Duong, Haoran Li, Rafael K. V. Maeda and Zhifei Wang</i>
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Date & Time	Wednesday, 11 March 2015, 8:30 – 10:00		
Chair	Ian O'Connor , <i>University of Lyon, FR</i>		
Co-Chair	Davide Bertozzi , <i>University of Ferrara, IT</i>		
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Date & Time	Wednesday, 11 March 2015, 8:30 – 10:00		
Chair	Lothar Thiele , <i>Swiss Federal Institute of Technology Zurich, CH</i>		
Co-Chair	Iain Bate , <i>University of York, UK</i>		
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Co-Chair	Panagiota Papavramidou, IMAG, FR

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Chair	Rolf Ernst, Technische Universität Braunschweig, DE
Co-Chair	Paul Pop, Technical University of Denmark, DK

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Session Title	Hot Topic - The Next Generation of Virtual Prototyping: Ultra-fast yet Accurate Simulation of HW/SW Systems		
Session Code / Room	5.8 / Salle LesDiguières		
Date & Time	Wednesday, 11 March 2015, 8:30 – 10:00		
Chair	Andy D. Pimentel , <i>University of Amsterdam, NL</i>		
Co-Chair	Christian Haubelt , <i>University of Rostock, DE</i>		
5.8.1 8:30 - 8:52	Ultra-Fast Source-Level Timing Simulation – High Accuracy Needs Exact Code Matching [1105] <i>Oliver Bringmann</i>		N/A
5.8.2 8:52 - 9:15	Host-Compiled Operating System and Processor Modeling [1105] <i>Andreas Gerstlauer</i>		N/A
5.8.3 9:15 - 9:37	Abstract Communication Models for Accurate and Fast SoC Simulation [1105] <i>Daniel Mueller-Gritschneider</i>		N/A
5.8.4 9:37 - 10:00	Industrial Perspective on Ultra-High Speed and Timing-Accurate SoC and Peripheral Models [1105] <i>Ajay Goyal</i>		N/A
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IP2-12	Occupancy Detection via iBeacon on Android Devices for Smart Building Management 629 <i>A. Corna, L. Fontana, A. A. Nacci and D. Sciuto</i>
IP2-13	A Neural Machine Interface Architecture for Real-Time Artificial Lower Limb Control 633 <i>Jason Kane, Qing Yang, Robert Hernandez, Willard Simoneau and Matthew Seaton</i>

Session Title	SPECIAL DAY Hot Topic: Platforms for the IoT
Session Code / Room	6.1 / Salle Oisans
Date & Time	Wednesday, 11 March 2015, 11:00 – 12:30
Chair	Christoph Grimm, TU Kaiserslautern, DE
Co-Chair	Marie-Minerve Louerat, University of Paris, FR

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6.1.3 11:44 - 12:06	Software Architectures for the Internet of Things N/A <i>Mario Trapp</i>
6.1.4 12:06 - 12:28	oneM2M : a Standard for an Open and Interoperable M2M Platform, thanks to Semantic Web Tools N/A <i>Marylin Arndt-Vincent</i>

Session Title	Physical Unclonable Functions
Session Code / Room	6.2 / Belle Etoile
Date & Time	Wednesday, 11 March 2015, 11:00 – 12:30
Chair	Ingrid Verbauwhede, KUL, BE
Co-Chair	Tim Güneysu, Ruhr University Bochum, DE

6.2.1 11:00 - 11:30	Efficient Attacks on Robust Ring Oscillator PUF with Enhanced Challenge-Response Set 641 <i>Phuong Ha Nguyen, Durga Prasad Sahoo, Rajat Subhra Chakraborty and Debdeep Mukhopadhyay</i>
6.2.2 11:30 - 12:00	A Robust Authentication Methodology Using Physically Unclonable Functions in DRAM Arrays 647 <i>Maryam S. Hashemian, Bhanu Singh, Francis Wolff, Daniel Weyer, Steve Clay and Christos Papachristou</i>
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Session Code / Room	6.3 / Stendhal		
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Chair	Guillermo Payá Vayá , <i>Leibniz Universität Hannover, DE</i>		
Co-Chair	Alberto Garcia-Ortiz , <i>U. Bremen, DE</i>		
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	<i>Hossein Mamaghanian and Pierre Vandergheynst</i>		
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	<i>Tony Casagrande and Nagarajan Ranganathan</i>		
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Session Code / Room	6.4 / Chartreuse		
Date & Time	Wednesday, 11 March 2015, 11:00 – 12:30		
Chair	Cristina Silvano , <i>Politecnico di Milano, IT</i>		
Co-Chair	Lars Bauer , <i>KIT, DE</i>		
6.4.1 11:00 - 11:30	A Ultra-Low-Energy Convolution Engine for Fast Brain-Inspired Vision in Multicore Clusters	683	
	<i>Francesco Conti and Luca Benini</i>		
6.4.2 11:30 - 12:00	Eliminating Intra-Warp Conflict Misses in GPU	689	
	<i>Bin Wang, Zhuo Liu, Xinning Wang and Weikuan Yu</i>		
6.4.3 12:00 - 12:15	RNA: A Reconfigurable Architecture for Hardware Neural Acceleration	695	
	<i>Fengbin Tu, Shouyi Yin, Peng Ouyang, Leibo Liu and Shaojun Wei</i>		
6.4.4 12:15 - 12:30	ApproxANN: An Approximate Computing Framework for Artificial Neural Network	701	
	<i>Qian Zhang, Ting Wang, Ye Tian, Feng Yuan and Qiang Xu</i>		
Session Title	Multimedia and Consumer Electronics		
Session Code / Room	6.5 / Meije		
Date & Time	Wednesday, 11 March 2015, 11:00 – 12:30		
Chair	Theo Theocharides , <i>University of Cyprus, CY</i>		
Co-Chair	Marcello Coppola , <i>STMicroelectronics, FR</i>		
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	<i>Michael Schaffner, Frank K. Gürkaynak, Aljoscha Smolic and Luca Benini</i>		
6.5.2 11:30 - 12:00	A Small Non-Volatile Write Buffer to Reduce Storage Writes in Smartphones	713	
	<i>Mungyu Son, Sungkwang Lee, Kyungho Kim, Sungjoo Yoo and Sunggu Lee</i>		
6.5.3 12:00 - 12:15	Clustering-Based Multi-Touch Algorithm Framework for the Tracking Problem with a Large Number of Points	719	
	<i>Shih-Lun Huang, Sheng-Yi Hung and Chung-Ping Chen</i>		

6.5.4 **A Low Energy 2D Adaptive Median Filter Hardware** 725
12:15 - 12:30 *Ercan Kalali and Ilker Hamzaoglu*

Session Title	Panel - The Future of Electronics, Semiconductor, and Design in Europe
Session Code / Room	6.6 / Bayard
Date & Time	Wednesday, 11 March 2015, 11:00 – 12:30
Chair	Giovanni De Micheli, <i>École Polytechnique Fédérale de Lausanne (EPFL), CH</i>
Co-Chair	(.) (.), (.), (.)

6.6.1 **Panelist [1146]** N/A
Giovanni De Micheli

6.6.2 **Panelist [1146]** N/A
Jalal Bagherli

6.6.3 **Panelist [1146]** N/A
Thierry Collette

6.6.4 **Panelist [1146]** N/A
Antun Domic

6.6.5 **Panelist [1146]** N/A
Horst Symanzik

6.6.6 **Panelist [1146]** N/A
Sir Hossein Yassaye

Session Title	Application-Mapping Strategies for Many-Cores
Session Code / Room	6.7 / Les Bans
Date & Time	Wednesday, 11 March 2015, 11:00 – 12:30
Chair	Amit Kumar Singh, <i>University of York, UK</i>
Co-Chair	Marc Geilen, <i>Eindhoven University of Technology, NL</i>

6.7.1 **Adaptive on-the-Fly Application Performance Modeling for Many Cores** 730
11:00 - 11:30 *Sebastian Kobbe, Lars Bauer and Jörg Henkel*

6.7.2 **Customization of OpenCL Applications for Efficient Task Mapping under** 736
11:30 - 12:00 **Heterogeneous Platform Constraints**
Edoardo Paone, Francesco Robino, Gianluca Palermo, Vittorio Zaccaria, Ingo Sander and Cristina Silvano

6.7.3 **Enabling Multi-threaded Applications on Hybrid Shared Memory Manycore** 742
12:00 - 12:30 **Architectures**
Tushar Rawat and Aviral Shrivastava

Session Title	SPECIAL DAY Keynote
Session Code / Room	7.0 / (.)
Date & Time	Wednesday, 11 March 2015, 12:50 – 14:30
Chair	(.) (.), (.), (.)
Co-Chair	(.) (.), (.), (.)

7.0.1 **(Keynote)** **SPECIAL DAY Keynote: Industrie 4.0: From the Internet of Things to Cyber-Physical** N/A
12:50 - 13:20 **Production Systems**
Wolfgang Wahlster

7.0.2(Keynote) **SPECIAL DAY Keynote: The Rise of IoT, and the Role of EDA** N/A
13:20 - 13:50 *Antun Domic*

Session Title	SPECIAL DAY Hot Topic: Design Tools for the IoT
Session Code / Room	7.1 / Salle Oisans
Date & Time	Wednesday, 11 March 2015, 14:30 – 16:00
Chair	Frank Schirrmeister, Cadence, US
Co-Chair	(.) (.), (.), (.)

7.1.1 **IoT Challenges and Opportunities** N/A
14:30 - 14:52 *Hannes Schwaderer*

7.1.2 **IoT Development for a Connected Car** N/A
14:52 - 15:14 *Marco Bekooij*

7.1.3 **If It's Not on the Internet, It's Just a Thing: but what are the IoT problems to solve?** N/A
15:14 - 15:36 *Remy Pottier*

7.1.4 **IoT Hardware & Mixed Signal Development** N/A
15:36 - 15:58 *Ian Dennison*

Session Title	Hot Topic - Trading Accuracy for Efficient Computing
Session Code / Room	7.2 / Belle Etoile
Date & Time	Wednesday, 11 March 2015, 14:30 – 16:00
Chair	Muhammad Shafique, KIT: Karlsruhe Institute of Technology, DE
Co-Chair	Marc Geilen, Eindhoven University of Technology, NL

7.2.1 **Computing Approximately, and Efficiently** 748
14:30 - 14:52 *Swagath Venkataramani, Srimat T. Chakradhar, Kaushik Roy and Anand Raghunathan*

7.2.2 **Novel Inexact Memory Aware Algorithm Co-design for Energy Efficient Computation** 752
14:52 - 15:15 **— Algorithmic Principles**
Guru Prakash Arumugam, Prashanth Srikanthan, John Augustine, Krishna Palem, Eli Upfal, Ayush Bhargava, Parishkrati and Sreelatha Yenugula

7.2.3 **Designing Inexact Systems Efficiently Using Elimination Heuristics** 758
15:15 - 15:37 *Shyamsundar Venkataraman, Akash Kumar, Jeremy Schlachter and Christian Enz*

7.2.4 **Opportunities for Energy Efficient Computing: A Study of Inexact General Purpose Processors for High-Performance and Big-Data Applications** 764
15:37 - 16:00 *Peter Dübén, Jeremy Schlachter, Parishkrati, Sreelatha Yenugula, John Augustine, Christian Enz, K. Palem and T. N. Palmer*

Session Title	Hot Topic - Advances in Hardware Trojans Detection
Session Code / Room	7.3 / Stendhal
Date & Time	Wednesday, 11 March 2015, 14:30 – 16:00
Chair	Giorgio Di Natale, LIRMM, CNRS/University of Montpellier, FR
Co-Chair	

7.3.1 **Introduction to Hardware Trojans Detection Methods** 770
14:30 - 14:45 *Julien Francq and Florian Frick*

7.3.2 **New Testing Procedure for Finding Insertion Sites of Stealthy Hardware Trojans** 776
14:45 - 15:00 *Sophie Dupuis, Papa-Sidy Ba, Marie-Lise Flottes, Giorgio Di Natale and Bruno Rouzeyre*

- 7.3.3 **Hardware Trojan Detection by Delay and Electromagnetic Measurements** 782
15:00 - 15:30 *X.-T. Ngo, I. Exurville, S. Bhasin, J.-L. Danger, S. Guilley, Z. Najm, J.-B. Rigaud and B. Robisson*
- 7.3.4 **A High Efficiency Hardware Trojan Detection Technique Based on Fast SEM Imaging** 788
15:30 - 16:00 *Franck Courbon, Philippe Loubet-Moundi, Jacques J.A. Fournier and Assia Tria*

Session Title	Routing Advances for Fault-tolerant and Multicast NoCs
Session Code / Room	7.4 / Chartreuse
Date & Time	Wednesday, 11 March 2015, 14:30 – 16:00
Chair	Fabien Clermidy, CEA, FR
Co-Chair	Masoud Daneshtalab, University of Turku, FI

- 7.4.1 **Mixed Wire and Surface-wave Communication Fabrics for Decentralized On-Chip Multicasting** 794
14:30 - 15:00 *Ammar Karkar, Kin-Fai Tong, Terrence Mak and Alex Yakovlev*
- 7.4.2 **d²-LBDR: Distance-Driven Routing to Handle Permanent Failures in 2D Mesh NoCs** 800
15:00 - 15:30 *Rimpy Bishnoi, Vijay Laxmi, Manoj Singh Gaur and José Flich*
- 7.4.3 **Synergistic Use of Multiple On-Chip Networks for Ultra-Low Latency and Scalable Distributed Routing Reconfiguration** 806
15:30 - 16:00 *Marco Balboni, José Flich and Davide Bertozzi*

Session Title	System Reliability: from Runtime to Design Languages
Session Code / Room	7.5 / Meije
Date & Time	Wednesday, 11 March 2015, 14:30 – 16:00
Chair	Dirk Stroobandt, University of Gent, BE
Co-Chair	Diana Goehringer, University of Bochum, DE

- 7.5.1 **Axilog: Language Support for Approximate Hardware Design** 812
14:30 - 15:00 *Amir Yazdanbakhsh, Divya Mahajan, Bradley Thwaites, Jongse Park, Anandhavel Nagendrakumar, Sindhuja Sethuraman, Kartik Ramkrishnan, Nishanthi Ravindran, Rudra Jariwala, Abbas Rahimi, Hadi Esmailzadeh and Kia Bazargan*
- 7.5.2 **Improving MPSoC Reliability through Adapting Runtime Task Schedule based on Time-Related Fault Behavior** 818
15:00 - 15:30 *Laura A. Rozo Duque, Jose M. Monsalve Diaz and Chengmo Yang*
- 7.5.3 **ACSEM: Accuracy-Configurable Fast Soft Error Masking Analysis in Combinatorial Circuits** 824
15:30 - 15:45 *Florian Kriebel, Semeen Rehman, Duo Sun, Pau Vilimelis Aceituno, Muhammad Shafique and Jörg Henkel*
- 7.5.4 **Energy Minimization for Fault Tolerant Scheduling of Periodic Fixed-Priority Applications on Multiprocessor Platforms** 830
15:45 - 16:00 *Qiushi Han, Ming Fan, Linwei Niu and Gang Quan*

Session Title	Test Power and 3-D Fault Tolerance
Session Code / Room	7.6 / Bayard
Date & Time	Wednesday, 11 March 2015, 14:30 – 16:00
Chair	Juergen Schloeffel, <i>Mentor, DE</i>
Co-Chair	Sybille Hellebrand, <i>Universität Paderborn, DE</i>

- 7.6.1 **Dp-Fill: A Dynamic Programming Approach to X-Filling for Minimizing Peak Test Power in Scan Tests** 836
14:30 - 15:00 *Satya A. Trinadh, Sobhan Babu Ch., Shiv Govind Singh, Seetal Potluri and Kamakoti V.*
- 7.6.2 **A Scan Partitioning Algorithm for Reducing Capture Power of Delay-Fault LBIST** 842
15:00 - 15:30 *Nan Li, Elena Dubrova and Gunnar Carlsson*
- 7.6.3 **Architecture of Ring-based Redundant TSV for Clustered Faults** 848
15:30 - 16:00 *Wei-Hen Lo, Kang Chi and TingTing Hwang*

Session Title	Energy-efficient Computing
Session Code / Room	7.7 / Les Bans
Date & Time	Wednesday, 11 March 2015, 14:30 – 16:00
Chair	Damien Querlioz, <i>CNRS-IEF, FR</i>
Co-Chair	Swaroop Ghosh, <i>University of South Florida, US</i>

- 7.7.1 **Technology-Design Co-optimization of Resistive Cross-point Array for Accelerating Learning Algorithms on Chip** 854
14:30 - 15:00 *Pai-Yu Chen, Deepak Kadetotad, Zihan Xu, Abinash Mohanty, Binbin Lin, Jieping Ye, Sarma Vrudhula, Jae-sun Seo, Yu Cao and Shimeng Yu*
- 7.7.2 **Spiking Neural Network with RRAM: Can We Use It for Real-World Application?** 860
15:00 - 15:30 *Tianqi Tang, Lixue Xia, Boxun Li, Rong Luo, Yiran Chen, Yu Wang and Huazhong Yang*
- 7.7.3 **Comparative Study of Power-Gating Architectures for Nonvolatile FinFET-SRAM Using Spintronics-Based Retention Technology** 866
15:30 - 16:00 *Yusuke Shuto, Shuu'ichirou Yamamoto and Satoshi Sugahara*

Session Title	Interactive Presentations
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Date & Time	Wednesday, 11 March 2015, 16:00 – 16:30

- IP3-1 **STT MRAM-Based PUFs** 872
Elena Ioana Vatajelu, Giorgio Di Natale, Marco Indaco and Paolo Prinetto
- IP3-2 **Spatial and Temporal Granularity Limits of Body Biasing in UTBB-FDSOI** 876
Johannes Maximilian Kühn, Dustin Peterson, Hideharu Amano, Oliver Bringmann and Wolfgang Rosenstiel
- IP3-3 **A Hardware Implementation of a Radial Basis Function Neural Network Using Stochastic Logic** 880
Yuan Ji, Feng Ran, Cong Ma and David J. Lilja
- IP3-4 **SODA: Software Defined FPGA based Accelerators for Big Data** 884
Chao Wang, Xi Li and Xuehai Zhou
- IP3-5 **Dynamic Reconfigurable Puncturing for Secure Wireless Communication** 888
Liang Tang, Jude Angelo Ambrose, Akash Kumar and Sri Parameswaran

IP3-6	QR-Decomposition Architecture Based on Two-Variable Numeric Function Approximation 892 <i>Jochen Rust, Frank Ludwig and Steffen Paul</i>
IP3-7	In-place Memory Mapping Approach for Optimized Parallel Hardware Interleaver Architectures 896 <i>Saeed Ur Reehman, Cyrille Chavet, Philippe Coussy and Awais Sani</i>
IP3-8	Maximizing Common Idle Time on Multi-Core Processors with Shared Memory 900 <i>Chenchen Fu, Yingchao Zhao, Minming Li and Chun Jason Xue</i>
IP3-9	Maximizing IO Performance Via Conflict Reduction for Flash Memory Storage Systems 904 <i>Qiao Li, Liang Shi, Congming Gao, Kaijie Wu, Chun Jason Xue, Qingfeng Zhuge and Edwin H.-M. Sha</i>
IP3-10	A Hybrid Packet/Circuit-switched Router to Accelerate Memory Access in NoC-based Chip Multiprocessors 908 <i>Abbas Mazloumi and Mehdi Modarressi</i>
IP3-11	Semiautomatic Implementation of a Bioinspired Reliable Analog Task Distribution Architecture for Multiple Analog Cores 912 <i>Julius von Rosen, Markus Meissner and Lars Hedrich</i>
IP3-12	Power-Efficient Accelerator Allocation in Adaptive Dark Silicon Many-Core Systems 916 <i>Muhammad Usman Karim Khan, Muhammad Shafique and Jörg Henkel</i>
IP3-13	Thermal-Aware Floorplanning for Partially-Reconfigurable FPGA-Based Systems 920 <i>Davide Pagano, Mikel Vuka, Marco Rabozzi, Riccardo Cattaneo, Donatella Sciuto and Marco D. Santambrogio</i>
IP3-14	Feedback-Bus Oscillation Ring: A General Architecture for Delay Characterization and Test of Interconnects 924 <i>Shi-Yu Huang, Meng-Ting Tsai, Kun-Han (Hans) Tsai and Wu-Tung Cheng</i>
IP3-15	Analog Neuromorphic Computing Enabled by Multi-Gate Programmable Resistive Devices 928 <i>Vehbi Calayir, Mohamed Darwish, Jeffrey Weldon and Larry Pileggi</i>
IP3-16	An Energy-efficient Non-volatile In-Memory Accelerator for Sparse-representation based Face Recognition 932 <i>Yuhao Wang, Hantao Huang, Leibin Ni, Hao Yu, Mei Yan, Chuliang Weng, Wei Yang and Junfeng Zhao</i>

Session Title	SPECIAL DAY Panel: Security and Verification for the IoT
Session Code / Room	8.1 / Salle Oisans
Date & Time	Wednesday, 11 March 2015, 17:00 – 18:30
Chair	Dominique Borriane, TIMA Lab, UGA, FR
Co-Chair	Guy Gogniat, Lab-STICC, Université de Bretagne-Sud, Lorient, FR

8.1.1	Panelist N/A <i>Erdoğan Öztürk</i>
8.1.2	Panelist N/A <i>Guido Bertoni</i>
8.1.3	Panelist N/A <i>Francois-Xavier Standaert</i>
8.1.4	Panelist N/A <i>Christoph Grimm</i>

8.1.5 **Panelist** N/A
 Wayne Burleson

Session Title	Flash Memories & Numerical Approximation
Session Code / Room	8.2 / Belle Etoile
Date & Time	Wednesday, 11 March 2015, 17:00 – 18:30
Chair	Philippe Coussy, <i>Universite de Bretagne-Sud, FR</i>
Co-Chair	Zili Shao, <i>HongKong Polytechnic University, HK</i>

- 8.2.1 **HLC: Software-Based Half-Level-Cell Flash Memory** 936
 17:00 - 17:30 *Han-Yi Lin and Jen-Wei Hsieh*
- 8.2.2 **AHEAD: Automated Framework for Hardware Accelerated Iterative Data Analysis** 942
 17:30 - 18:00 *Ebrahim M. Songhori, Azalia Mirhoseini, Xuyang Lu and Farinaz Koushanfar*
- 8.2.3 **Design Method for Multiplier-Less Two-Variable Numeric Function Approximation** 948
 18:00 - 18:30 *Jochen Rust and Steffen Paul*

Session Title	Dynamic Thermal Management for Multi-cores
Session Code / Room	8.3 / Stendhal
Date & Time	Wednesday, 11 March 2015, 17:00 – 18:30
Chair	Georgios Karakonstantis, <i>Queen's University, UK</i>
Co-Chair	José Luis Ayala, <i>Complutense University of Madrid, ES</i>

- 8.3.1 **A Thermal Stress-Aware Algorithm for Power and Temperature Management of** 954
 17:00 - 17:30 **MPSoCs**
 Mehdi Kamal, Arman Iranfar, Ali Afzali-Kusha and Massoud Pedram
- 8.3.2 **Predictive Dynamic Thermal and Power Management for Heterogeneous Mobile** 960
 17:30 - 18:00 **Platforms**
 Gaurav Singla, Gurinderjit Kaur, Ali K. Unver and Umit Y. Ogras
- 8.3.3 **Power-Efficient Control of Thermoelectric Coolers Considering Distributed Hot Spots** 966
 18:00 - 18:30 *Mohammad Javad Dousti and Massoud Pedram*

Session Title	Industrial System Design Opportunities
Session Code / Room	8.4 / Chartreuse
Date & Time	Wednesday, 11 March 2015, 17:00 – 18:30
Chair	Wehn Norbert, <i>University of Kaiserslautern, DE</i>
Co-Chair	David Raphael, <i>CEA-LIST, FR</i>

- 8.4.1 **DSP Based Programmable FHD HEVC Decoder** 972
 17:00 - 17:15 *Sangjo Lee, Joonho Song, Wonchang Lee, Doohyun Kim, Jaehyun Kim and Shihwa Lee*
- 8.4.2 **Accelerating Complex Brain-Model Simulations on GPU Platforms** 974
 17:15 - 17:30 *H.A. Du Nguyen, Zaid Al-Ars, Georgios Smaragdos and Christos Strydis*
- 8.4.3 **A Packet-switched Interconnect for Many-core Systems with BE and RT Service** 980
 17:30 - 17:45 *Runan Ma, Zhida Hui and Axel Jantsch*
- 8.4.4 **Reducing Trace Size in Multimedia Applications Endurance Tests** 984
 17:45 - 18:00 *Serge Vladimir Emteu Tchagou, Alexandre Termier, Jean-Francois Méhaut, Brice Videau, Miguel Santana and Ren Quiniou*
- 8.4.5 **Exploration and Design of Embedded Systems Including Neural Algorithms** 986
 18:00 - 18:15 *Jean-Marc Philippe, Alexandre Carbon, Olivier Brousse and Michel Paindavoine*

- 8.4.6 **A New Distributed Framework for Integration of District Energy Data from Heterogeneous Devices** 992
 18:15 - 18:30 *Francesco G. Brundu, Edoardo Patti, Andrea Acquaviva, Michelangelo Grosso, Gaetano Rasconà, Salvatore Rinaudo and Enrico Macii*

Session Title	Hot Topic - Spintronics based Computing
Session Code / Room	8.5 / Meije
Date & Time	Wednesday, 11 March 2015, 17:00 – 18:30
Chair	Lionel Torres, LIRMM, CNRS/University of Montpellier, FR
Co-Chair	Weisheng Zhao, University Paris--Sud/CNRS, FR

- 8.5.1 **Spintronic Devices as Key Elements for Energy-Efficient Neuroinspired Architectures** 994
 17:00 - 17:20 *Nicolas Locatelli, Adrien F. Vincent, Alice Mizrahi, Joseph S. Friedman, Damir Vodenicarevic, Joo-Von Kim, Jacques-Olivier Klein, Weisheng Zhao, Julie Grollier and Damien Querlioz*
- 8.5.2 **Giant Spin Hall Effect (GSHE) Logic Design for Low Power Application** 1000
 17:20 - 17:40 *Yaojun Zhang, Bonan Yan, Wenqing Wu, Hai Li and Yiran Chen*
- 8.5.3 **Spintronics-Based Nonvolatile Logic-in-Memory Architecture Towards an Ultra-Low-Power and Highly Reliable VLSI Computing Paradigm** 1006
 17:40 - 18:00 *Takahiro Hanyu, Daisuke Suzuki, Naoya Onizawa, Shoun Matsunaga, Masanori Natsui and Akira Mochizuki*
- 8.5.4 **Potential Applications Based on NVM Emerging Technologies** 1012
 18:00 - 18:15 *Sophiane Senni, Raphael Martins Brum, Lionel Torres, Gilles Sassatelli, Abdoulaye Gamatie and Bruno Mussard*
- 8.5.5 **From Device to System: Cross-layer Design Exploration of Racetrack Memory** 1018
 18:15 - 18:30 *Guangyu Sun, Chao Zhang, Hehe Li, Yue Zhang, Weiqi Zhang, Yizi Gu, Yinan Sun, J.-O. Klein, D. Ravelosona, Yongpan Liu, Weisheng Zhao and Huazhong Yang*

Session Title	Statistical Answers to Analog/Mixed Signal Design and Test Problems
Session Code / Room	8.6 / Bayard
Date & Time	Wednesday, 11 March 2015, 17:00 – 18:30
Chair	Jacob Abraham, Univ. Texas Austin, US
Co-Chair	Michel Renovell, LIRMM/CNRS, FR

- 8.6.1 **Efficient Bit Error Rate Estimation for High-Speed Link by Bayesian Model Fusion** 1024
 17:00 - 17:30 *Chenlei Fang, Qicheng Huang, Fan Yang, Xuan Zeng, Xin Li and Chenjie Gu*
- 8.6.2 **Fast Deployment of Alternate Analog Test Using Bayesian Model Fusion** 1030
 17:30 - 18:00 *John Liaperdos, Haralampos-G. Stratigopoulos, Louay Abdallah, Yiorgos Tsiatouhas, Angela Arapoyanni and Xin Li*
- 8.6.3 **Bordersearch: An Adaptive Identification of Failure Regions** 1036
 18:00 - 18:15 *Markus Dobler, Manuel Harrant, Monica Rafaila, Georg Pelz, Wolfgang Rosenstiel and Martin Bogdan*
- 8.6.4 **A Fast Spatial Variation Modeling Algorithm for Efficient Test Cost Reduction of Analog/RF Circuits** 1042
 18:15 - 18:30 *Hugo Gonçalves, Xin Li, Miguel Correia, Vitor Tavares, John Carulli and Kenneth Butler*

Session Title	Compilers and Tools for Performance
Session Code / Room	8.7 / Les Bans
Date & Time	Wednesday, 11 March 2015, 17:00 – 18:30
Chair	Frank Hannig, Erlangen University, DE
Co-Chair	Christian Haubelt, University of Rostock, DE

- 8.7.1 **Bytecode-to-C Ahead-of-Time Compilation for Android Dalvik Virtual Machine** 1048
17:00 - 17:30 *Hyeong-Seok Oh, Ji Hwan Yeo and Soo-Mook Moon*
- 8.7.2 **A Basic Linear Algebra Compiler for Embedded Processors** 1054
17:30 - 18:00 *Nikolaos Kyrtatas, Daniele G. Spampinato and Markus Püschel*
- 8.7.3 **VARSHA: Variation and Reliability-Aware Application Scheduling with Adaptive Parallelism in the Dark-Silicon Era** 1060
18:00 - 18:30 *Nishit Kapadia and Sudeep Pasricha*

Session Title	SPECIAL DAY Hot Topic: Game-changing Innovative Technology Platforms for Health Care
Session Code / Room	9.1 / Salle Oisans
Date & Time	Thursday, 12 March 2015, 8:30 – 10:00
Chair	Jo De Boeck, IMEC, BE
Co-Chair	(.) (.), (.), (.)

- 9.1.1 **Game changing innovation in Technology and Design for effective health care** N/A
8:30 - 9:00 *Chris Van Hoof*
- 9.1.2 **Advanced Self-Powered Systems of Integrated Sensors and Technologies** N/A
9:00 - 9:30 *Veena Misra*
- 9.1.3 **Healthcare in an Integrated Digital World** N/A
9:30 - 10:00 *Jean-Paul Linnartz*

Session Title	Hot Topic - Transparent Use of Accelerators in Heterogeneous Computing Systems
Session Code / Room	9.2 / Belle Etoile
Date & Time	Thursday, 12 March 2015, 8:30 – 10:00
Chair	Christian Plessl, University of Paderborn, DE
Co-Chair	Heiner Giefers, IBM Research Zurich, CH

- 9.2.1 **Transparent Acceleration of Program Execution Using Reconfigurable Hardware** 1066
8:30 - 8:52 *Nuno Paulino, João Canas Ferreira, João Bispo and João M. P. Cardoso*
- 9.2.2 **Accelerating Arithmetic Kernels with Coherent Attached FPGA Coprocessors** 1072
8:52 - 9:15 *Heiner Giefers, Raphael Polig and Christoph Hagleitner*
- 9.2.3 **Transparent Offloading of Computational Hotspots from Binary Code to Xeon Phi** 1078
9:15 - 9:37 *Marvin Damschen, Heinrich Riebler, Gavin Vaz and Christian Plessl*
- 9.2.4 **Transparent Linking of Compiled Software and Synthesized Hardware** 1084
9:37 - 10:00 *David B. Thomas, Shane T. Fleming, George A. Constantinides and Dan R. Ghica*

Session Title	NoC Optimization
Session Code / Room	9.3 / Stendhal
Date & Time	Thursday, 12 March 2015, 8:30 – 10:00
Chair	Marcello Coppola, ST Microelectronics, FR
Co-Chair	José Flich, Universidad Politecnica de Valencia, ES

- 9.3.1 **PhaseNoC: TDM Scheduling at the Virtual-Channel Level for Efficient Network Traffic Isolation** 1090
8:30 - 9:00 *A. Psarras, I. Seitanidis, C. Nicopoulos and G. Dimitrakopoulos*
- 9.3.2 **Rate-based vs Delay-Based Control for DVFS in NoC** 1096
9:00 - 9:30 *Mario R. Casu and Paolo Giaccone*
- 9.3.3 **NoC-Enabled Multicore Architectures for Stochastic Analysis of Biomolecular Reactions** 1102
9:30 - 10:00 *Turbo Majumder, Xian Li, Paul Bogdan and Partha Pande*

Session Title	Advanced Trends in Alternative Technologies
Session Code / Room	9.4 / Chartreuse
Date & Time	Thursday, 12 March 2015, 8:30 – 10:00
Chair	Martin Trefzer, University of York, UK
Co-Chair	Yvain Thonnart, CEA-LETI, FR

- 9.4.1 **Optimization of Quantum Computer Architecture using a Resource-Performance Simulator** 1108
8:30 - 9:00 *Muhammad Ahsan and Jungsang Kim*
- 9.4.2 **Volume-Oriented Sample Preparation for Reactant Minimization on Flow-Based Microfluidic Biochips with Multi-Segment Mixers** 1114
9:00 - 9:30 *Chi-Mei Huang, Chia-Hung Liu and Juinn-Dar Huang*
- 9.4.3 **Thermal Aware Design Method for VCSEL-Based On-Chip Optical Interconnect** 1120
9:30 - 10:00 *Hui Li, Alain Fourmigue, Sébastien Le Beux, Xavier Letartre, Ian O'Connor and Gabriela Nicolescu*

Session Title	Modeling and Simulation of Extra-Functional Properties
Session Code / Room	9.5 / Meije
Date & Time	Thursday, 12 March 2015, 8:30 – 10:00
Chair	Sylvian Kaiser, DOCEA Power, FR
Co-Chair	Sander Stuijk, TU Eindhoven, NL

- 9.5.1 **Dynamic Power and Performance Back-Annotation for Fast and Accurate Functional Hardware Simulation** 1126
8:30 - 9:00 *Dongwook Lee, Lizy K. John and Andreas Gerstlauer*
- 9.5.2 **Fast and Precise Cache Performance Estimation for Out-Of-Order Execution** 1132
9:00 - 9:30 *Roeland J. Douma, Sebastian Altmeyer and Andy D. Pimentel*
- 9.5.3 **A Calibration Based Thermal Modeling Technique for Complex Multicore Systems** 1138
9:30 - 10:00 *Devendra Rai and Lothar Thiele*

Session Title	Design, Synthesis and Validation of Analog Circuits		
Session Code / Room	9.6 / Bayard		
Date & Time	Thursday, 12 March 2015, 8:30 – 10:00		
Chair	Marie-Minerve Louerat, LIP6/CNRS, FR		
Co-Chair	Georges Gielen, ESAT - KU Leuven, BE		
9.6.1 8:30 - 9:00	Knowledge-Intensive, Causal Reasoning for Analog Circuit Topology Synthesis in Emergent and Innovative Applications		1144
	<i>Fanshu Jiao, Sergio Montano and Alex Doboli</i>		
9.6.2 9:00 - 9:30	A CNN-Inspired Mixed Signal Processor Based on Tunnel Transistors		1150
	<i>Behnam Sedighi, Indranil Palit, X. Sharon Hu, Joseph Nahas and Michael Niemier</i>		
9.6.3 9:30 - 9:45	Layout-Aware Sizing of Analog ICs using Floorplan & Routing Estimates for Parasitic Extraction		1156
	<i>Nuno Lourenço, Ricardo Martins and Nuno Horta</i>		
9.6.4 9:45 - 10:00	Initial Transient Response of Oscillators with Long Settling Time		1162
	<i>Hans Georg Brachtendorf and Kai Bittner</i>		
Session Title	Test Generation, Fault Simulation and Diagnosis		
Session Code / Room	9.7 / Les Bans		
Date & Time	Thursday, 12 March 2015, 8:30 – 10:00		
Chair	Jacob Abraham, The University of Texas at Austin, US		
Co-Chair	Bernd Becker, University Freiburg, DE		
9.7.1 8:30 - 9:00	Quick Error Detection Tests with Fast Runtimes for Effective Post-Silicon Validation and Debug		1168
	<i>David Lin, Eswaran S., Sharad Kumar, Eric Rentschler and Subhasish Mitra</i>		
9.7.2 9:00 - 9:30	GPU-Accelerated Small Delay Fault Simulation		1174
	<i>Eric Schneider, Stefan Holst, Michael A. Kochte, Xiaoqing Wen and Hans-Joachim Wunderlich</i>		
9.7.3 9:30 - 9:45	Fault Simulation with Parallel Exact Critical Path Tracing in Multiple Core Environment		1180
	<i>Maksim Gorev, Raimund Ubar and Sergei Devadze</i>		
9.7.4 9:45 - 10:00	On the Automatic Generation of SBST Test Programs for In-Field Test		1186
	<i>Andreas Riefert, Riccardo Cantoro, Matthias Sauer Matteo Sonza Reorda and Bernd Becker</i>		
Session Title	Hot Topic - Monolithic 3D: A Path to Real 3D Integrated Chips		
Session Code / Room	9.8 / Salle LesDiguières		
Date & Time	Thursday, 12 March 2015, 8:30 – 10:00		
Chair	Giovanni De Micheli, École Polytechnique Fédérale de Lausanne (EPFL), CH		
Co-Chair	Ian O'Connor, Institut des Nanotechnologies de Lyon, FR		
9.8.1 8:30 - 9:00	A Comprehensive Study of Monolithic 3D Cell on Cell Design Using Commercial 2D Tool		1192
	<i>O. Billoint, H. Sarhan, I. Rayane, M. Vinet, P. Batude, C. Fenouillet-Beranger, O. Rozeau, G. Cibrario, F. Deprat, A. Fustier, J.-E. Michallet, O. Faynot, O. Turkyilmaz, J.-F. Christmann, S. Thuries and F. Clermidy</i>		
9.8.2 9:00 - 9:30	Monolithic 3D Integration: A Path from Concept to Reality		1197
	<i>Max M. Shulaker, Tony F. Wu, Mohamed M. Sabry, Hai Wei, H.-S. Philip Wong and Subhasish Mitra</i>		

9.8.3 **A Ultra-Low-Power FPGA Based on Monolithically Integrated RRAMs 1203**
 9:30 - 10:00 *Pierre-Emmanuel Gaillardon, Xifan Tang, Jury Sandrini, Maxime Thammasack, Somayyeh Rahimian Omam, Davide Sacchetto, Yusuf Leblebici and Giovanni De Micheli*

Session Title	Interactive Presentations
Session Code	IP4
Date & Time	Thursday, 12 March 2015, 10:00 – 10:30

- IP4-1 **PWL: A Progressive Wear Leveling to Minimize Data Migration Overheads for NAND Flash Devices 1209**
Fu-Hsin Chen, Ming-Chang Yang, Yuan-Hao Chang and Tei-Wei Kuo
- IP4-2 **Towards Trustable Storage Using SSDs with Proprietary FTL 1213**
Xiaotong Cui, Minhui Zou, Liang Shi and Kaijie Wu
- IP4-3 **User-Specific Skin Temperature-Aware DVFS for Smartphones 1217**
Begum Egilmez, Gokhan Memik, Seda Ogrenci-Memik and Oguz Ergin
- IP4-4 **Formal Probabilistic Analysis of Distributed Dynamic Thermal Management 1221**
Shafaq Iqtedar, Osman Hasan, Muhammad Shafique and Jörg Henkel
- IP4-5 **A Hybrid Quasi Monte Carlo Method for Yield Aware Analog Circuit Sizing Tool 1225**
Engin Afacan, Gönenç Berkol, Ali Emre Pusane, Günhan Dündar and Faik Baskaya
- IP4-6 **Feature Selection for Alternate Test Using Wrappers: Application to an RF LNA Case Study 1229**
Manuel J. Barragan and Gildas Leger
- IP4-7 **Improving SIMD Code Generation in QEMU 1233**
Sheng-Yu Fu, Jan-Jan Wu and Wei-Chung Hsu
- IP4-8 **Reuse Distance Analysis for Locality Optimization in Loop-Dominated Applications 1237**
Christakis Lezos, Grigoris Dimitroulakos and Konstantinos Masselos
- IP4-9 **TAPP: Temperature-Aware Application Mapping for NoC-Based Many-Core Processors 1241**
Di Zhu, Lizhong Chen, Timothy M. Pinkston and Massoud Pedram
- IP4-10 **Malleable NoC: Dark Silicon Inspired Adaptable Network-on-Chip 1245**
Haseeb Bokhari, Haris Javaid, Muhammad Shafique Jörg Henkel and Sri Parameswaran
- IP4-11 **Topology Identification for Smart Cells in Modular Batteries 1249**
Sebastian Steinhorst and Martin Lukasiewicz
- IP4-12 **LVS Check for Photonic Integrated Circuits – Curvilinear Feature Extraction and Validation 1253**
Ruping Cao, Julien Billoudet, John Ferguson, Lionel Couder, John Cayo, Alexandre Arriordaz and Ian O'Connor
- IP4-13 **FP-Scheduling for Mode-Controlled Dataflow: A Case Study 1257**
Alok Lele, Orlando Moreira and Kees van Berkel
- IP4-14 **Ageing Simulation of Analogue Circuits and Systems using Adaptive Transient Evaluation 1261**
Felix Salfelder and Lars Hedrich
- IP4-15 **A Tool for the Assisted Design of Charge Redistribution SAR ADCs 1265**
S. Brenna, A. Bonetti, A. Bonfanti and A. L. Lacaita
- IP4-16 **Detection of Asymmetric Aging-Critical Voltage Conditions in Analog Power-Down Mode 1269**
Michael Zwerger and Helmut Graeb

IP4-17	High Performance Single Supply CMOS Inverter Level up Shifter for Multi-Supply Voltages Domains 1273 <i>José C. García, Juan A. Montiel–Nelson, J. Sosa and Saeid Nooshabadi</i>
IP4-18	Exploring the Impact of Functional Test Programs Re-Used for Power-Aware Testing 1277 <i>A. Touati, A. Bosio, L. Dilillo, P. Girard, A. Virazel, P. Bernardi M.Sonza Reorda</i>
IP4-19	A Breakpoint-Based Silicon Debug Technique with Cycle-Granularity for Handshake-Based SoC 1281 <i>Hsin-Chen Chen, Cheng-Rong Wu, Katherine Shu-Min Li and Kuen-Jong Lee</i>
IP4-20	Fault Diagnosis in Designs with Extreme Low Pin Test Data Compressors 1285 <i>Subhadip Kundu, Parthajit Bhattacharya and Rohit Kapur</i>
IP4-21	Optimizing Dynamic Trace Signal Selection Using Machine Learning and Linear Programming 1289 <i>Charlie Shucheng Zhu and Sharad Malik</i>

Session Title	SPECIAL DAY Hot Topic: Wearable Medical Applications
Session Code / Room	10.1 / Salle Oisans
Date & Time	Thursday, 12 March 2015, 11:00 – 12:30
Chair	Renzo Dal Molin, Sorin Group, FR
Co-Chair	Chris Van Hoof, IMEC, BE

10.1.1 11:00 - 11:30	Mobile health monitoring: adoption and system challenges N/A <i>David Shanes</i>
10.1.2 11:30 - 12:00	Wearable Device For Physical and Emotional Health Monitoring N/A <i>Srinivasan Murali</i>
10.1.3 12:00 - 12:30	Gait Analysis for Fall Prediction Using Hierarchical Textile-Based Capacitive Sensor Arrays 1293 <i>Rebecca Baldwin, Stan Bobovych, Ryan Robucci, Chintan Patel and Nilanjan Banerjee</i>

Session Title	Emerging Memory Architectures
Session Code / Room	10.2 / Belle Etoile
Date & Time	Thursday, 12 March 2015, 11:00 – 12:30
Chair	Luca Perniola, CEA-LETI, FR
Co-Chair	Pierre-Emmanuel Gaillardon, École Polytechnique Fédérale de Lausanne (EPFL), CH

10.2.1 11:00 - 11:30	HReRAM: A Hybrid Reconfigurable Resistive Random-Access Memory 1299 <i>Miguel Angel Lastras-Montaño, Amirali Ghofrani and Kwang-Ting Cheng</i>
10.2.2 11:30 - 12:00	nCode: Limiting Harmful Writes to Emerging Mobile NVRAM through Code Swapping 1305 <i>Kan Zhong, Duo Liu, Linbo Long, Xiao Zhu, Weichen Liu, Qingfeng Zhuge and Edwin H.-M. Sha</i>
10.2.3 12:00 - 12:15	System Level Exploration of a STT-MRAM based Level 1 Data-Cache 1311 <i>Manu Perumkunnil Komalan, Christian Tenllado, José Ignacio Gómez Pérez, Francisco Tirado Fernández and Francky Catthoor</i>
10.2.4 12:15 - 12:30	High Performance AXI-4.0 Based Interconnect for Extensible Smart Memory Cube 1317 <i>Erfan Azarkhish, Davide Rossi, Igor Loi and Luca Benini</i>

Session Title	Modern Architectures for Real-Time Systems
Session Code / Room	10.3 / Stendhal
Date & Time	Thursday, 12 March 2015, 11:00 – 12:30
Chair	Benny Akesson, Czech Technical University in Prague, CZ
Co-Chair	Rodolfo Pellizzoni, University of Waterloo, CA

- 10.3.1 **The Federated Scheduling of Constrained-Deadline Sporadic DAG Task Systems** 1323
11:00 - 11:30 *Sanjoy Baruah*
- 10.3.2 **Run and Be Safe: Mixed-Criticality Scheduling with Temporary Processor Speedup** 1329
11:30 - 12:00 *Pengcheng Huang, Pratyush Kumar, Georgia Giannopoulou and Lothar Thiele*
- 10.3.3 **Multi-Core Fixed-Priority Scheduling of Real-Time Tasks with Statistical Deadline Guarantee** 1335
12:00 - 12:30 *Tianyi Wang, Linwei Niu, Shaolei Ren and Gang Quan*

Session Title	Energy Aware Data Center: Design and Management
Session Code / Room	10.4 / Chartreuse
Date & Time	Thursday, 12 March 2015, 11:00 – 12:30
Chair	Carlo Cavazzoni, Cineca, IT
Co-Chair	Andreas Burg, École Polytechnique Fédérale de Lausanne (EPFL), CH

- 10.4.1 **Memory Fast-Forward: A Low Cost Special Function Unit to Enhance Energy Efficiency in GPU for Big Data Processing** 1341
11:00 - 11:30 *Eunhyeok Park, Junwhan Ahn, Sungpack Hong, Sungjoo Yoo and Sunggu Lee*
- 10.4.2 **Power Minimization for Data Center with Guaranteed QoS** 1347
11:30 - 12:00 *Shuo Liu, Soamar Homs, Ming Fan, Shaolei Ren, Gang Quan and Shangping Ren*
- 10.4.3 **Energy-Aware Cooling for Hot-Water Cooled Supercomputers** 1353
12:00 - 12:30 *Christian Conficoni, Andrea Bartolini, Andrea Tilli, Giampietro Tecchiolli, Luca Benini*

Session Title	Reconfigurable Architectures and Applications
Session Code / Room	10.5 / Meije
Date & Time	Thursday, 12 March 2015, 11:00 – 12:30
Chair	Christian Plessl, University of Paderborn, DE
Co-Chair	Enno Lübbers, Intel Labs Europe, DE

- 10.5.1 **Hybrid Adaptive Clock Management for FPGA Processor Acceleration** 1359
11:00 - 11:30 *Alexandru Gheolbănoiu, Lucian Petrică and Sorin Cotofană*
- 10.5.2 **A Scalable and High-Density FPGA Architecture with Multi-Level Phase Change Memory** 1365
11:30 - 12:00 *Chunan Wei, Ashutosh Dhar and Deming Chen*
- 10.5.3 **FPGA Accelerated DNA Error Correction** 1371
12:00 - 12:30 *Anand Ramachandran, Yun Heo, Wen-Mei Hwu, Jian Ma and Deming Chen*

Session Title	Circuit Design and Test: From Characterization to Measurement
Session Code / Room	10.6 / Bayard
Date & Time	Thursday, 12 March 2015, 11:00 – 12:30
Chair	Salvador Mir, TIMA/CNRS, FR
Co-Chair	Christoph Grimm, TU Kaiserslautern, DE

- 10.6.1 **Fast Eye Diagram Analysis for High-Speed CMOS Circuits** 1377
11:00 - 11:30 *Seyed Nematollah Ahmadyan, Chenjie Gu, Suriyaprakash Natarajan, Eli Chiprout and Shobha Vasudevan*
- 10.6.2 **Statistical Library Characterization Using Belief Propagation Across Multiple Technology Nodes** 1383
11:30 - 12:00 *Li Yu, Sharad Saxena, Christopher Hess, Ibrahim (Abe) M. Elfadel, Dimitri Antoniadis and Duane Boning*
- 10.6.3 **Combining Adaptive Alternate Test and Multi-Site** 1389
12:00 - 12:15 *Gildas Leger*
- 10.6.4 **A Method for the Estimation of Defect Detection Probability of Analog/RF Defect-Oriented Tests** 1395
12:15 - 12:30 *John Liaperdos, Angela Arapoyanni and Yiorgos Tsiatouhas*

Session Title	Expanding the Applicability of Formal Methods
Session Code / Room	10.7 / Les Bans
Date & Time	Thursday, 12 March 2015, 11:00 – 12:30
Chair	Barbara Jobstmann, École Polytechnique Fédérale de Lausanne (EPFL), CH
Co-Chair	Christoph Scholl, University Freiburg, DE

- 10.7.1 **Automated Rectification Methodologies to Functional State-Space Unreachability** 1401
11:00 - 11:30 *Ryan Berryhill and Andreas Veneris*
- 10.7.2 **Over-Approximating Loops to Prove Properties Using Bounded Model Checking** 1407
11:30 - 12:00 *Priyanka Darke, Bharti Chimdyalwar, R. Venkatesh, Ulka Shrotri and Ravindra Metta*
- 10.7.3 **Automatic Extraction of Micro-Architectural Models of Communication Fabrics from Register Transfer Level Designs** 1413
12:00 - 12:15 *Sebastiaan J. C. Joosten and Julien Schmaltz*
- 10.7.4 **GALS Synthesis and Verification for xMAS Models** 1419
12:15 - 12:30 *Frank Burns, Danil Sokolov and Alex Yakovlev*

Session Title	SPECIAL DAY Keynote
Session Code / Room	11.0 / (.)
Date & Time	Thursday, 12 March 2015, 13:15 – 14:00
Chair	Jo De Boeck, IMEC, BE
Co-Chair	David Atienza, École Polytechnique Fédérale de Lausanne (EPFL), CH

- 11.0.1(Keynote) **Best IP Award Presentation** N/A
13:15 - 13:20 *Oliver Bringmann*
- 11.0.2(Keynote) **Bioelectronic Medicines - Heralding in a New Therapeutic Approach** N/A
13:20 - 13:50 *Kristoffer Famm*

Session Title	SPECIAL DAY Hot Topic: Implantable Medical Applications
Session Code / Room	11.1 / Salle Oisans
Date & Time	Thursday, 12 March 2015, 14:00 – 15:30
Chair	Refet Firat Yazicioglu, IMEC, BE
Co-Chair	Jean-Paul Linnartz, Philips, NL

11.1.1	Active implantable medical devices N/A
14:00 - 14:30	<i>Renzo Dal Molin</i>
11.1.2	Towards next generation Deep Brain Stimulation N/A
14:30 - 15:00	<i>Michael Decré</i>
11.1.3	Integrated Circuits and Microsystems for Emerging Biomedical Devices N/A
15:00 - 15:30	<i>Minkyu Je</i>

Session Title	Variability and Robustness for Emerging Technologies
Session Code / Room	11.2 / Belle Etoile
Date & Time	Thursday, 12 March 2015, 14:00 – 15:30
Chair	Edith Beigne, CEA-LETI, FR
Co-Chair	Andy Tyrrell, University of York, UK

11.2.1	Variation-Aware, Reliability-Emphasized Design and Optimization of RRAM Using SPICE Model 1425
14:00 - 14:30	<i>H. Li, Z. Jiang, P. Huang, Y. Wu, H.-Y. Chen, B. Gao, X. Y. Liu, J. F. Kang and H.-S. P. Wong</i>
11.2.2	Impact of Process-Variations in STTMRAM and Adaptive Boosting for Robustness 1431
14:30 - 15:00	<i>Seyedhamidreza Motaman, Swaroop Ghosh and Nitin Rath</i>
11.2.3	Device/Circuit/Architecture Co-Design of Reliable STT-MRAM 1437
15:00 - 15:15	<i>Zoha Pajouhi, Xuanyao Fong and Kaushik Roy</i>
11.2.4	Sub-10 nm FinFETs and Tunnel-FETs: From Devices to Systems 1443
15:15 - 15:30	<i>Ankit Sharma, A. Arun Goud and Kaushik Roy</i>

Session Title	Hot Topic - Multi/Many-Core Programming: Where Are We Standing?
Session Code / Room	11.3 / Stendhal
Date & Time	Thursday, 12 March 2015, 14:00 – 15:30
Chair	Wehn Norbert, Technische Universität Kaiserslautern, DE
Co-Chair	

11.3.1	5% or 5X? The Performance Gap in SIMD Optimization, and Possible Solutions[1129] N/A
14:00 - 14:15	<i>Ben Juurlink</i>
11.3.2	Model-Based Design of Real-Time Systems [1129] N/A
14:15 - 14:30	<i>Lothar Thiele</i>
11.3.3	Programming Adaptive and Energy-Efficient Many-Cores [1129] N/A
14:30 - 14:45	<i>Jeronimo Castrillon</i>
11.3.4	Confidence in the Use of Software Tools According to the ISO 26262 in Automotive Multicore Applications [1129] N/A
14:45 - 15:00	<i>Ralph Jessenberger</i>

11.3.5 15:00 - 15:15	Automotive Multicore Microcontroller Simulation, Debugging and Analysis using Virtual Prototypes [1129] <i>Victor Reyes</i>	N/A
11.3.6 15:15 - 15:30	Applying Multicore Compiler Research into Industrial Practices: An Early Experience Report [1129] <i>Weihua Sheng</i>	N/A

Session Title	Logic Synthesis: the Faithful, the Approximate and the Stochastic
Session Code / Room	11.4 / Chartreuse
Date & Time	Thursday, 12 March 2015, 14:00 – 15:30
Chair	Alex Yakovlev, <i>University of Newcastle, UK</i>
Co-Chair	José Monteiro, <i>University of Lisbon, PT</i>

11.4.1 14:00 - 14:30	A New Approximate Adder with Low Relative Error and Correct Sign Calculation 1449 <i>Junjun Hu and Weikang Qian</i>
11.4.2 14:30 - 15:00	Towards Binary Circuit Models That Faithfully Capture Physical Solvability 1455 <i>Matthias Függer, Robert Najvirt, Thomas Nowak and Ulrich Schmid</i>
11.4.3 15:00 - 15:15	A Coupling Area Reduction Technique Applying ODC Shifting 1461 <i>Yi Diao, Tak-Kei Lam, Xing Wei and Yu-Liang Wu</i>
11.4.4 15:15 - 15:30	A General Design of Stochastic Circuit and Its Synthesis 1467 <i>Zheng Zhao and Weikang Qian</i>

Session Title	Ultra-low Power Devices for Health and Rehabilitation
Session Code / Room	11.5 / Meije
Date & Time	Thursday, 12 March 2015, 14:00 – 15:30
Chair	Georgios Karakonstantis, <i>Queen's University, UK</i>
Co-Chair	José M. Moya, <i>Technical University of Madrid, ES</i>

11.5.1 14:00 - 14:30	Paper, Pen and Ink: An Innovative System and Software Framework to Assist Writing Rehabilitation 1473 <i>Leonardo Guardati, Filippo Casamassima, Elisabetta Farella and Luca Benini</i>
11.5.2 14:30 - 15:00	An All-Digital Spike-Based Ultra-Low-Power IR-UWB Dynamic Average Threshold Crossing Scheme for Muscle Force Wireless Transmission 1479 <i>Amirhossein, Masoud Shahshahani, Paolo Motto Ros, Alberto Bonanno, Marco Crepaldi, Maurizio Martina, Danilo Demarchi and Guido Masera</i>
11.5.3 15:00 - 15:30	A Pulsed-Index Technique for Single-Channel, Low-Power, Dynamic Signaling 1485 <i>Shahzad Muzaffar, Jerald Yoo, Ayman Shabra and Ibrahim (Abe) M. Elfadel</i>

Session Title	Video Architectures for Multimedia and Communications
Session Code / Room	11.6 / Bayard
Date & Time	Thursday, 12 March 2015, 14:00 – 15:30
Chair	Frederic Petro, <i>TIMA, FR</i>
Co-Chair	Marcello Coppola, <i>STMicroelectronics, FR</i>

11.6.1 14:00 - 14:30	SAPPHIRE: An Always-on Context-Aware Computer Vision System for Portable Devices 1491 <i>Swagath Venkataramani, Victor Bahl, Xian-Sheng Hua, Jie Liu, Jin Li, Matthai Phillipose, Bodhi Priyantha and Mohammed Shoaib</i>
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11.6.2	Approximate Associative Memristive Memory for Energy-Efficient GPUs 1497
14:30 - 15:00	<i>Abbas Rahimi, Amirali Ghofrani, Kwang-Ting Cheng, Luca Benini and Rajesh K. Gupta</i>
11.6.3	Platform-Aware Dynamic Configuration Support for Efficient Text Processing on Heterogeneous System 1503
15:00 - 15:15	<i>Mi Sun Park, Omesh Tickoo, Vijaykrishnan Narayanan, Mary Jane Irwin and Ravi Iyer</i>
11.6.4	A Deblocking Filter Hardware Architecture for the High Efficiency Video Coding Standard 1509
15:15 - 15:30	<i>Cláudio Machado Diniz, Muhammad Shafique, Felipe Vogel Dalcin, Sergio Bampi and Jörg Henkel</i>

Session Title	Exploiting Dark Silicon
Session Code / Room	11.7 / Les Bans
Date & Time	Thursday, 12 March 2015, 14:00 – 15:30
Chair	Olivier Heron, CEA LIST, FR
Co-Chair	Domenik Helms, OFFIS, DE

11.7.1	MatEx: Efficient Transient and Peak Temperature Computation for Compact Thermal Models 1515
14:00 - 14:30	<i>Santiago Pagani, Jian-Jia Chen, Muhammad Shafique, and Jörg Henkel</i>
11.7.2	Distributed Reinforcement Learning for Power Limited Many-Core System Performance Optimization 1521
14:30 - 15:00	<i>Zhuo Chen and Diana Marculescu</i>
11.7.3	An Energy-Efficient Virtual Channel Power-Gating Mechanism for On-Chip Networks 1527
15:00 - 15:15	<i>Amirhossein Mirhosseini, Mohammad Sadrosadati, Ali Fakhrzadehgan, Mehdi Modarressi and Hamid Sarbazi-Azad</i>
11.7.4	M-DTM: Migration-based Dynamic Thermal Management for Heterogeneous Mobile Multi-core Processors 1533
15:15 - 15:30	<i>Young Geun Kim, Minyong Kim, Jae Min Kim and Sung Woo Chu</i>

Session Title	Interactive Presentations
Session Code	IP5
Date & Time	Thursday, 12 March 2015, 15:30 – 16:00

IP5-1	Towards Systematic Design of 3D pNML Layouts 1539
	<i>Robert Perricone, Yining Zhu, Katherine M. Sanders, X. Sharon Hu and Michael Niemier</i>
IP5-2	DESTINY: A Tool for Modeling Emerging 3D NVM and eDRAM caches 1543
	<i>Matt Poremba, Sparsh Mittal, Dong Li, Jeffrey S. Vetter and Yuan Xie</i>
IP5-3	Big-Data Streaming Applications Scheduling with Online Learning and Concept Drift Detection 1547
	<i>Karim Kanoun and Mihaela van der Schaar</i>
IP5-4	Design Flow and Run-Time Management for Compressed FPGA Configurations 1551
	<i>Christophe Huriaux, Antoine Courtay and Olivier Sentieys</i>
IP5-5	Empirical Modelling of FDSOI CMOS Inverter for Signal/Power Integrity Simulation 1555
	<i>Wael Dghais and Jonathan Rodriguez</i>
IP5-6	On-Chip Measurement of Bandgap Reference Voltage Using a Small Form Factor VCO Based Zoom-in ADC 1559
	<i>Osman Emir Erol, Sule Ozev, Chandra Suresh, Rubin Parekhji and Lakshmanan Balasubramanian</i>
IP5-7	Logical Equivalence Checking of Asynchronous Circuits Using Commercial Tools 1563
	<i>Arash Saijhashemi, Hsin-Ho Huang, Priyanka Bhalerao and Peter A. Beerel</i>

IP5-8	May-Happen-in-Parallel Analysis of ESL Models Using UPPAAL Model Checking 1567 <i>Che-Wei Chang and Rainer Dömer</i>
IP5-9	Verifying Synchronous Reactive Systems using Lazy Abstraction 1571 <i>Kumar Madhukar, Mandayam Srivas, Björn Wachter, Daniel Kroening and Ravindra Metta</i>
IP5-10	SPINTASTIC: Spin-Based Stochastic Logic for Energy-Efficient Computing 1575 <i>Rangharajan Venkatesan, Swagath Venkataramani, Xuanyao Fong, Kaushik Roy and Anand Raghunathan</i>
IP5-11	Leakage Power Reduction for Deeply-Scaled FinFET Circuits Operating in Multiple Voltage Regimes Using Fine-Grained Gate-Length Biasing Technique 1579 <i>Ji Li, Qing Xie, Yanzhi Wang, Shahin Nazarian and Massoud Pedram</i>
IP5-12	SubHunter: A High-Performance and Scalable Sub-Circuit Recognition Method with Prüfer-Encoding 1583 <i>Hong-Yan Su, Chih-Hao Hsu and Yih-Lang Li</i>
IP5-13	Timing Verification for Adaptive Integrated Circuits 1587 <i>Rohit Kumar, Bing Li, Yiren Shen, Ulf Schlichtmann and Jiang Hu</i>
IP5-14	A Robust Approach for Process Variation Aware Mask Optimization 1591 <i>Jian Kuang, Wing-Kai Chow and Evangeline F.Y. Young</i>
IP5-15	FastTree: A Hardware KD-Tree Construction Acceleration Engine for Real-Time Ray Tracing 1595 <i>Xingyu Liu, Yangdong Deng, Yufei Ni and Zonghui Li</i>
IP5-16	Reverse Longstaff-Schwartz American Option Pricing on hybrid CPU/FPGA Systems 1599 <i>Christian Brugger, Javier Alejandro Varela, Norbert Wehn, Songyin Tang and Ralf Korn</i>
IP5-17	Accurate Electrothermal Modeling of Thermoelectric Generators 1603 <i>Mohammad Javad Dousti, Antonio Petraglia and Massoud Pedram</i>
IP5-18	Efficiency-Driven Design Time Optimization of a Hybrid Energy Storage System with Networked Charge Transfer Interconnect 1607 <i>Qing Xie, Younghyun Kim, Donkyu Baek, Yanzhi Wang, Massoud Pedram and Naehyuck Chang</i>

Session Title	SPECIAL DAY Hot Topic: Technology and Design Platforms for Diagnostics
Session Code / Room	12.1 / Salle Oisans
Date & Time	Thursday, 12 March 2015, 16:00 – 17:30
Chair	Chris Van Hoof, IMEC, BE
Co-Chair	Minkyu Je, Daegu Gyeongbuk Institute of Science and Technology (DGIST), KR

12.1.1 16:00 - 16:30	Ultraflexible Integrated Circuits for imperceptible Bio-Sensors N/A <i>Tsuyoshi Sekitani</i>
12.1.2 16:30 - 17:00	Nanoelectronics for disruptive diagnostic platforms N/A <i>Liesbet Lagae</i>
12.1.3 17:00 - 17:30	An Ultra-Low Power Dual-mode ECG Monitor for Healthcare and Wellness 1611 <i>Daniele Bortolotti, Mauro Mangia, Andrea Bartolini, Riccardo Rovatti, Gianluca Setti and Luca Benini</i>

Session Title	Solver Advances and Emerging Applications
Session Code / Room	12.2 / Belle Etoile
Date & Time	Thursday, 12 March 2015, 16:00 – 17:30
Chair	Julien Schmaltz, Eindhoven University of Technology, NL
Co-Chair	Gianpiero Cabodi, Politecnico di Torino, IT
12.2.1 16:00 - 16:30	Solving DQBF Through Quantifier Elimination 1617 <i>Karina Gitina, Ralf Wimmer, Sven Reimer, Matthias Sauer, Christoph Scholl and Bernd Becker</i>
12.2.2 16:30 - 17:00	Formal Verification of Sequential Galois Field Arithmetic Circuits Using Algebraic Geometry 1623 <i>Xiaojun Sun, Priyank Kalla, Tim Pruss and Florian Enescu</i>
12.2.3 17:00 - 17:15	A Universal Macro Block Mapping Scheme for Arithmetic Circuits 1629 <i>Xing Wei, Yi Diao, Tak-Kei Lam and Yu-Liang Wu</i>
12.2.4 17:15 - 17:30	Towards An Accurate Reliability, Availability and Maintainability Analysis Approach for Satellite Systems Based on Probabilistic Model Checking 1635 <i>Khaza Anuarul Hoque, Otmane Ait Mohamed and Yvon Savaria</i>
Session Title	Patterning, Pairing, Placement and Packing
Session Code / Room	12.3 / Stendhal
Date & Time	Thursday, 12 March 2015, 16:00 – 17:30
Chair	Dirk Stroobandt, Ghent University, BE
Co-Chair	Patrick Groeneveld, Synopsys, US
12.3.1 16:00 - 16:30	An Effective Triple Patterning Aware Grid-Based Detailed Routing Approach 1641 <i>Zhiqing Liu, Chuangwen Liu and Evangeline F. Y. Young</i>
12.3.2 16:30 - 17:00	Simultaneous Transistor Pairing and Placement for CMOS Standard Cells 1647 <i>Ang Lu, Hsueh-Ju Lu, En-Jang Jang, Yu-Po Lin, Chun-Hsiang Hung, Chun-Chih Chuang and Rung-Bin Lin</i>
12.3.3 17:00 - 17:15	A TSV Noise-Aware 3-D Placer 1653 <i>Yu-Min Lee, Chun Chen, JiaXing Song and Kuan-Te Pan</i>
12.3.4 17:15 - 17:30	Identifying Redundant Inter-Cell Margins and Its Application to Reducing Routing Congestion 1659 <i>Woohyun Chung, Seongbo Shim and Youngsoo Shin</i>
Session Title	High-Level Specifications and Models
Session Code / Room	12.4 / Chartreuse
Date & Time	Thursday, 12 March 2015, 16:00 – 17:30
Chair	Marc Geilen, TU Eindhoven, NL
Co-Chair	Laurence Pierre, TIMA Lab, FR
12.4.1 16:00 - 16:30	Models for Deterministic Execution of Real-Time Multiprocessor Applications 1665 <i>Peter Poplavko, Dario Socci, Paraskevas Bourgos, Saddek Bensalem and Marius Bozga</i>

12.4.2 **Pre-Simulation Symbolic Analysis of Synchronization Issues between Discrete Event and Timed Data Flow Models of Computation** 1671
 16:30 - 17:00 *Liliana Andrade, Torsten Maehne, Alain Vachoux, Cédric Ben Aoun, François Pêcheux and Marie-Minerve Louërat*

12.4.3 **Formal Consistency Checking over Specifications in Natural Languages** 1677
 17:00 - 17:00 *Rongjie Yan, Chih-Hong Cheng and Yesheng Chai*

Session Title	New Perspectives in Next-Generation Medical Systems
Session Code / Room	12.5 / Meije
Date & Time	Thursday, 12 March 2015, 16:00 – 17:30
Chair	Martin Rajman, École Polytechnique Fédérale de Lausanne (EPFL), CH
Co-Chair	Giovanni De Micheli, École Polytechnique Fédérale de Lausanne (EPFL), CH

12.5.1 **Tackling the Bottleneck of Delay Tables in 3D Ultrasound Imaging** 1683
 16:00 - 16:30 *A. Ibrahim, P. Hager, A. Bartolini, F. Angiolini, M. Ardit, L. Benini and G. De Micheli*

12.5.2 **Integrated CMOS Receiver for Wearable Coil Arrays in MRI Applications** 1689
 16:30 - 17:00 *Benjamin Sporrer, Luca Bettini, Christian Vogt, Andreas Mehmman, Jonas Reber, Josip Marjanovic, David O. Brunner, Thomas Burger, Klaas P. Pruessmann, Gerhard Tröster and Qiuting Huang*

12.5.3 **Tactile Prosthetics in WiseSkin** 1695
 17:00 - 17:30 *J. Farserotu, J-D. Decotignie, J. Baborowski, P-N Volpe, C.R. Quirós, V. Kopta, C. Enz, S. Lacour, H. Michaud, R. Martuzzi, V. Koch, H. Huang, T. Li and C. Antfolk*

Session Title	Medical Design Automation: Is All That Simulation and Model Reduction Getting Into Your "Head"?
Session Code / Room	12.6 / Bayard
Date & Time	Thursday, 12 March 2015, 16:00 – 17:30
Chair	Luca Daniel, MIT, US
Co-Chair	Luis Miguel Silveira, INESC-ID, PT

12.6.1 **The Old, the New, and the Recycled – EDA Algorithms in Connectomic** N/A
 16:00 - 16:30 *Lou Scheffer*

12.6.2 **Computational Modeling and Simulation of Synchronized Firing Behaviors of the Brain** N/A
 16:30 - 17:00 *Peng Li*

12.6.3 **Electromagnetic Power Deposition Analysis Tool for High Resolution Magnetic Resonance Imaging Brain Scans** N/A
 17:00 - 17:30 *Jorge F. Villena, Athanasios G. Polimeridis, Lawrence L. Wald, Elfar Adalsteinsson, Jakob K. White and Luca Daniel*

Session Title	Brain Health and Mental Disorders: new challenges for electronic engineers
Session Code / Room	12.7 / Les Bans
Date & Time	Thursday, 12 March 2015, 16:00 – 17:30
Chair	Pablo Laguna, CIBER-BBN, ES
Co-Chair	Josep Maria Haro, Parc Sanitari Sant Joan de Deu, ES

12.7.1 16:00 - 16:15	Towards a quantitative measurement of mental disorders N/A <i>Jordi Aguiló</i>
12.7.2 16:15 - 16:40	Improving the monitoring and the understanding of mental disorders N/A <i>Giovanni de Girolamo and Josep Maria Haro</i>
12.7.3 16:40 - 17:05	World Analysis of non-invasive cardiovascular signals for the monitoring of psychophysiological states N/A <i>Michele Orini and Pablo Laguna</i>
12.7.4 17:05 - 17:30	Healthcare in an Integrated Digital World N/A <i>Arben Merkoçi</i>

Additional Papers

The Next Generation of Virtual Prototyping: Ultra-fast yet Accurate Simulation of HW/SW Systems 1698
Oliver Bringmann, Wolfgang Ecker, Andreas Gerstlauer, Ajay Goyal, D. Mueller-Gritschneider, P. Sasidharan, S. Singh

Multi/Many-Core Programming: Where are we Standing? 1708
J. Castrillon, W. Sheng, R. Jessenberger, L. Thiele, L. Schorr, B. Juurlink, M. Alvarez-Mesa, A. Pohl, V. Reyes, R. Leupers

Memristor Based Computation-in-Memory Architecture for Data-Intensive Applications 1718
S. Hamdioui, L. Xie, h. Anh Du Nguyen, M. Taouil, K. Bertels, H. Corporaal, h. Jiao, F. Catthoor, D. Wouters, L. Eike, J. Van Lunteren

Panel: The Future of Electronics, Semiconductors, and Design In Europe 1726
M. Cassale-Rossi, G. De Micheli, J. Baherli, A. Domic, H. Symanzik, B. Sensortec, H. Yassaie