MONDAY 27 OCTOBER 2014

09.00 Opening and welcome
Jari Nurmi, Tampere University of Technology (FI)

09.15 Invited talk: Brain-implanted wireless chips to control paralyzed limbs
Leena Ukkonen, Tampere University of Technology (FI)

10.00 Energy-Efficient Message Authentication for IEEE 802.15.4-Based Wireless Sensor Networks
Dubrova, Elena (1); Näslund, Mats (2); Selander, Göran (2); Tsiatis, Vlasios (2), 1: Royal Institute of Technology (SE); 2: Ericsson AB (SE)

10.20 A 10bit 16MS/s redundant SAR ADC with flexible window function for a digitally controlled DC-DC converter in 28nm CMOS
Haenzsche, Stefan; Höppner, Sebastian; Schüffny, Rene, Technische Universität Dresden (DE)

10.40 Coffee break

11.00 1.1 RF Circuits
CHAIR: NN

11.10 A 28 GHz SiGe QVCO and divider for an 81-86 GHz E-band beam steering transmitter PLL
Tired, Tobias (1); Sjöland, Henrik (1,2); Sandrup, Per (3); Wernehag, Johan (1); ud Din, Imad (2); Törnänen, Markus (1,3), 1 : Lund University; 2: Ericsson Research; 3: Ericsson Modems (SE)

11.30 A 97-106-GHz Differential I-Q Phase Shifter in 28-nm CMOS
Vahdati, Ali; Varonen, Mikko; Kärkkäinen, Mikko; Parveg, Dristy; Halonen, Kari, Aalto University (FI)

11.50 A 5.3 pJ/Pulse Impulse-Radio Ultra-Wideband Pulse-Generator for Band Group # 6
Lee, Kin Keung; Lande, Tor Sverre, University of Oslo (NO)

11.10 1.2 Systems Design
CHAIR: NN

11.10 Modular Layout-friendly Cell Library Design Applied for Subthreshold CMOS
Bjerkedok, Jonathan Edvard (1); Vatanjou, Ali Asghar (2); Ytterdal, Trond (2); Aunet, Snorre (2), 1: BITVIS; 2: Norwegian University of Science and Technology (NO)

11.30 Design Solutions for a Low-Power SoC Platform Using Near-Threshold Voltages
Kutila, Mika; Eriksson, Jonas; Ylitolva, Marko, University of Turku (FI)

11.30 1.2 Open Core Protocol (OCP) Clock Domain Crossing Interfaces
Herlev, Mathias; Poulsen, Christian Keis; Sparso, Jens, Technical University of Denmark (DK)

12.10 Lunch

13.30 Invited talk: Constructive noise
Tor S. Lande, University of Oslo (N)
2.1 AD Converters

CHAIR: NN

14.00 A Low-Power 2nd-order CT Delta Sigma Modulator with an Asynchronous SAR Quantizer
Radjen, Dejan (1); Anderson, Martin (2); Sundström, Lars (2); Andreani, Pietro (1); 1: Lund University, 2: Ericsson Research (SE)

14.20 A 9-bit 1-MS/s 7-uW SAR ADC for Ultra Low Power Radio
Wang, Ji; Carmona, Manuel Bejarano; Hall, Helgi; Radjen, Dejan; Lu, Ping; Lund University (SE)

14.40 A Novel Speculative Pseudo-Parallel Delta Sigma Modulator
Johansson, Jesper E.; Svensson, Lars S.; Chalmers University of Technology (SE)

3. Poster Session I

15.00 Coffee / Poster Session

Circuit Design for Broad band EMI reduction in LCD Driver IC
Kim, Soowoo; An, Sehyuk; Kim, Namsoo; Jeong, Hyeim; Choi, Hyoung, Chungbuk National University (KR)

Micromechanical accelerometers based on surface acoustic waves
Kukaev, Alex; Lukyanov, Dmitry; Shevchenko, Sergey; Elena, Filippova; Daniil, Sرافон, Saint-Petersburg Electrotechnical University (RU)

Micro Rate Gyroscopes Based on Surface Acoustic Waves
Kukaev, Alexander; Lukyanov, Dmitry; Shevchenko, Sergey; Roman, Telichkin; Alecsey, Ivanov, Saint-Petersburg Electrotechnical University (RU)

Design of a Sampling Switch for a 0.4-V SAR ADC Using a Multi-Stage Charge Pump
Harikumar, Prakash; Wikner, J Jacob, Linköping University (SE)

An Efficient Maximum Power Point Tracking Algorithm for Solar PV Panels
Radwan, Abdelrahman Hesham (1); Marzouk, Ahmad Mahfouz (1); Abd El Ghany, Mohamed Ahmed (1,2); Hofmann, Klaus (2); 1: German University in Cairo (EG); 2: TU Darmstadt (DE)

Polynomial Modelling: Accuracy vs. Shape
Aikio, Janne P.; Rahkonen, Timo, University of Oulu (FI)

2.1 Digital Systems

CHAIR: NN

14.00 Analyzing Worst-case Delay-Buffer-Equation for Wormhole Networks on Chip
Qian, Yue (1); Wang, Junhui (1); Lu, Zhonghai (2); 1: National University of Defense Technology, Chang'sha (CN); 2: Royal Institute of Technology (SE)

14.20 Silicon synapse designs for VLSI neuromorphic platform
Duc, Nguyen (1); Daneshfalab, Masoud (1,2); Dytcov, Sergei (1); Plosila, Juha (1); Tenhunen, Hannu (1,2); 1: University of Turku (FI); 2: Royal Institute of Technology (SE)

14.40 Fault Tolerant Routing Implementation Mechanism for irregular 2D Mesh NoCs
Bishnoi, Rimpy (1); Laxmi, Vijay (1); Gaur, Manoj Singh (1); Bin Ramlan, Radi Hussein (2); Zwolinski, Mark (2); 1: MNIT (IN); 2: University of Southampton (UK)

15.00 A Wide Range Adaptive Bandwidth PLL With Digital Calibration
Yilmazer, Umut; Yilmazer, Caglar; Toker, Ali, Istanbul Technical University (TR)

Evaluation of digital predistortion using the USRP N200 Software Defined Radio transceiver
Marzalek, Roman; Pospisil, Martin, Brno University of Technology (CZ)

Customizing 6LoWPAN Networks towards Internet-of- Things Based Ubiquitous Healthcare Systems
Nguyen Gia, Tuan; Thanigaivelan, Nanda Kumar; Rahmani, Amir-Mohammad; Westerlund, Tomi; Liljeberg, Pasi; Tenhunen, Hannu, University of Turku (FI)

4.1 Circuitry

CHAIR: NN

15.50 High-voltage Pulse-triggered SR Latch Level-Shifter Design Considerations
16.10 Integrated Reconfigurable High-Voltage Transmitting Circuit for CMUTs
Llimos Muntal, Pere; Larsen, Dennis Øland; Jørgensen, Ivan H.H.; Bruun, Erik, Technical University of Denmark (DK)

16.30 Cross talk measurements of a time-gated 4x128 SPAD array for pulsed Raman spectroscopy
Nissinen, Ilkka; Nissinen, Jan; Holma, Jouni; Kostamovaara, Juha, University of Oulu (FI)

16.50 Performance comparison of 5 Subthreshold CMOS flip-flops under process-, voltage-, and temperature variations, based on netlists from layout
Værnes, Magne; Yterdal, Trond; Aunet, Snorre, Norwegian University of Science and Technology (NO)

5. Time-to-Digital Converters
CHAIR: NN

10.00 A Modified Switching Scheme for Multiplexer Based Thermometer-to-Binary Encoders
Pasha, Muhammad; Vesterbacka, Mark, Linköping University (SE)

16.30 Energy Efficient FPGA based Hardware Accelerators for Financial Applications
Tofj, Jakob Kenn; Nannarelli, Alberto, Technical University of Denmark (DK)

16.50 Customization Methodology of a Coarse Grained Reconfigurable Architecture
Payandeh Azad, Siavosh (2); Farahini, Nasim (1); Hemani, Ahmed (1), 1: Tallinn University of Technology (EE); 2: Royal Institute of Technology (SE)

17.10 Break

19.00 Dinner
Restaurant XX, Street
Tandem Lange 3-dB 90° Hybrid Implemented on FR4 Substrate
Hayashi, Hitoshi, Sophia University (JP)

Hardware Implementation of the Exponential Function Using Taylor Series
Nilsson, Peter (1); Gangarajaiah, Rakesh (1); Hertz, Erik (2); Ur Rahman Shaik, Ateeq (1)
1: Lund University; 2: Halmstad University (SE)

Synthesis and Layout of an Asynchronous Network-on-Chip using Standard EDA Tools
Müller, Christoph Thomas; Kasapaki, Evangelia; Sørensen, Rasmus Bo; Sparsø, Jens, Technical University of Denmark (DK)

Design of Low Phase Noise K-band Voltage-Controlled Oscillator using 180 nm CMOS and Integrated Passive Device Technologies
Wei, Muh-Dey (1); Chang, Sheng-Fuh (2); Negra, Renato (1), 1: RWTH Aachen University (DE); 2: National Chung Cheng University (TW)

Stimuli generator for testing processes in VHDL
Neverdauskas, Tomas; Jasus, Vacius, Kaunas University of Technology (LT)

8. Energy Harvesting
CHAIR: NN

14.20 Voltage Multiplier Circuit for UHF RF to DC Conversion for RFID Applications
Chouhan, Shailesh Singh; Halonen, Kari, Aalto University (FI)

14.40 Design Considerations for Interface Circuits to Low-Voltage Piezoelectric Energy Harvesters
Nielsen-Lönn, Martin; Wikner, J Jacob; Alvandpour, Atila, Linköping University (SE)

15.00 Electronics for Characterizing and Using Photovoltaics
Rahkonen, Timo; Schuss, Christian; Hietanen, Mikko; Kotikumpu, Toni; Mustaniemi, Janne; Myllymäki, Aleksi, University of Oulu (FI)

GENERAL SCOPE OF THE CONFERENCE
The NORCHIP conference is the main microelectronics event of the Nordic countries. The annual IEEE CAS sponsored conference covers all areas of microelectronics, spanning from large digital systems to simple analog circuits. The wide
scope of NORCHIP is intentional promoting cross-field collaboration. NORCHIP is a well established conference with representation from both academia and industry. Papers of the highest scientific and technical quality are presented together with selected invited speakers and pre-conference tutorial sessions.

**SESSION ORGANISATION**
Both oral and poster presentations have been carefully selected through a regular review process and they will all appear in the proceedings. Equal quality measures have been applied to posters and lectures. Papers for oral presentation are selected based on thematic composition of sessions.

**PROCEEDINGS**
USB stick proceedings of the conference contributions will be distributed upon registration. Each participant will receive a copy of the proceedings. Proceedings and all presentations will be in English.

**BEST ANALOG PAPERS**
The Management Committee has since 1992 made special issues of the Springer International Journal on Analog Integrated Circuits and Signal Processing. Also this year we will publish a number of the best analog papers in the journal. http://www.springer.com/engineering/circuits+%26+systems/journal/10470

**BEST DIGITAL PAPERS**
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**CONFERENCE VENUE / ACCOMMADATION**
The conference location is in the heart of Tampere at:

**Tampere Hall**
Yliopistonkatu 55
FI-33101 Tampere
www.tamperehall.com

**REGISTRATION**
The registration must be completed at www.nochip.org. Conference fees are:
- Early registration on September 22 or before (450 euros)
- Late registration from September 23 onwards (550 euros)
- IEEE member discount 50 euros
- Student discount 50 euros
- SoC participant discount 50 euros
- Tutorial registration (50 euros)
- On-site registration is strongly discouraged

Registrations are acknowledged upon reception.

**CONFERENCE TUTORIALS**
There are two half-day tutorials this year, in cooperation with SoC 2014 and the IEEE CAS/SP Chapter in Finland.

**Sunday, October 26, 2014**
Tite: Physical Design Automation of Transistor Networks
Instructor: Prof. Ricardio Reis, IEEE CASS Distinguished Lecturer
Location: Tampere Hall, room t.b.d.

Preliminary Schedule:
13:30 - 15:00 lectures
15:00 - 15:30 coffee break
15:30 - 17:00 lectures

**Monday, October 27, 2014**
Tite: Software-Defined Electronics: a new research field for CAS Society
Instructor: Prof. Geza Kolumban, IEEE CASS Distinguished Lecturer
Location: Tampere Hall, room t.b.d.

Preliminary Schedule:
13:30 - 15:00 lectures
15:00 - 15:30 coffee break
15:30 - 17:00 lectures