

imec  esa

  
amicsa2018@imec.be

# AMICSA 2018

LEUVEN, BELGIUM  
17<sup>TH</sup>-20<sup>TH</sup> JUNE

# Welcome!





  
THE IC DESIGN COMPANY



 MICROTEST  
breakthrough innovation



  
Integrated Systems Development



# Scope – Tracks – Call for Papers



- Radiation Effects on analogue and mixed-signal ICs
- Methodologies for Radiation Hardening on analogue circuits at cell-, circuit-, and system design level
- Radiation-hardened technologies for analogue ICs
- Radiation tests of analogue and mixed-signal ICs
- Qualifying and quantifying radiation-hardness of analogue circuits
- Space Applications for analogue and mixed-Signal ICs
- Analogue intellectual property and re-usability of analogue circuits in space
- Needs and Requirements for analogue and mixed-signal ICs in future space missions
- In-orbit Experiences and flight heritage of analogue and mixed-signal Ics



- **Radiation Effects on analogue and mixed-signal ICs (3)**
- **Methodologies for Radiation Hardening on analogue circuits at cell-, circuit-, and system design level (11)**
- **Radiation-hardened technologies for analogue ICs (8)**
- **Radiation tests of analogue and mixed-signal ICs (3)**
- **Qualifying and quantifying radiation-hardness of analogue circuits (4)**
- **Space Applications for analogue and mixed-Signal ICs (7)**
- Analogue intellectual property and re-usability of analogue circuits in space
- Needs and Requirements for analogue and mixed-signal ICs in future space missions
- In-orbit Experiences and flight heritage of analogue and mixed-signal Ics

- Radiation Effects on analogue and mixed-signal ICs (3)
- Methodologies for Radiation Hardening on analogue circuits at cell-, circuit-, and system design level (11)
- Radiation-hardened technologies for analogue ICs (8)
- Radiation tests of analogue and mixed-signal ICs (3)
- Qualifying and quantifying radiation-hardness of analogue circuits (4)
- Space Applications for analogue and mixed-Signal ICs (7)

- C: Radiation Effects on analogue and mixed-signal ICs (3)
- D: Methodologies for Radiation Hardening on analogue circuits at cell-, circuit-, and system design level (11)
- B: Radiation-hardened technologies for analogue ICs (8)
- E: Radiation tests of analogue and mixed-signal ICs (3)
- F: Qualifying and quantifying radiation-hardness of analogue circuits (4)
- A: Space Applications for analogue and mixed-Signal ICs (7)

# Sessions



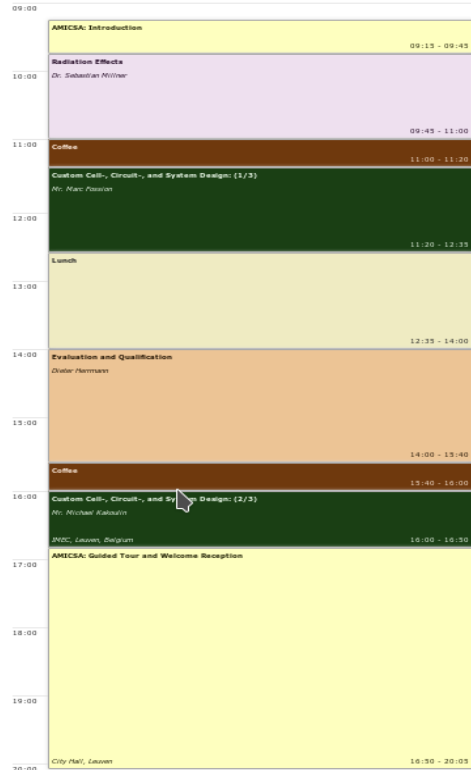
- A: Space Applications for analogue and mixed-Signal ICs (7)
- B: Radiation-hardened technologies for analogue ICs (8)
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- D: Methodologies for Radiation Hardening on analogue circuits at cell-, circuit-, and system design level (11)
- E: Radiation tests of analogue and mixed-signal ICs (3)
- F: Qualifying and quantifying radiation-hardness of analogue circuits (4)



# Schedule Overview

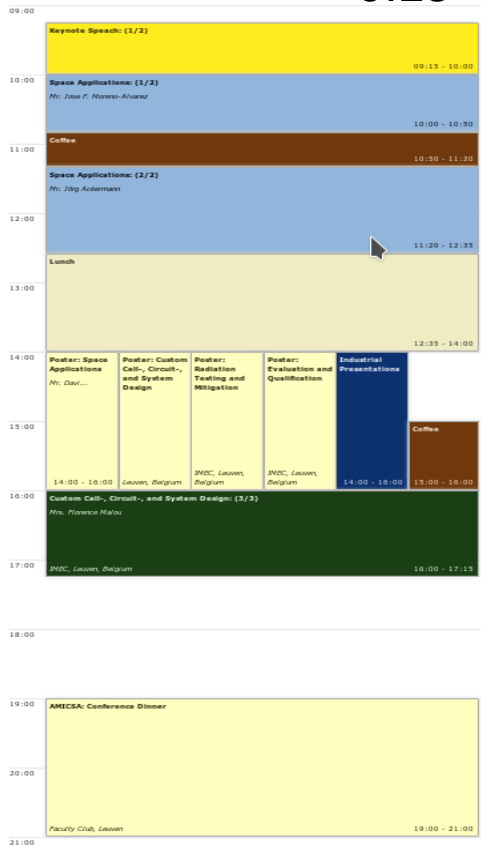
Monday

9:15



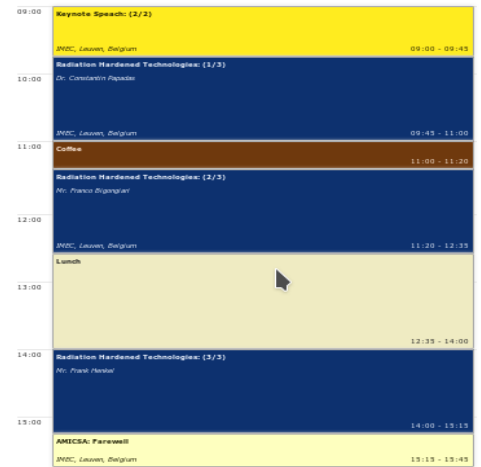
Tuesday

9:15



Wednesday

9:00



15:45

Sunday



# Presentation Slots



Oral Presentation:

20 minutes talk

+ 5 minutes questions

**25 minutes total**





Oral Presentation:

20 minutes talk

+ 5 minutes questions

**25 minutes total**

Poster Presentation:

2 hours poster session

2.5 days visible

**2.5 days total**

Oral Presentation:

20 minutes talk

+ 5 minutes questions

**25 minutes total**

**Please upload your slides!**

Poster Presentation:

2 hours poster session

2.5 days visible

**2.5 days total**

**Please hang up your posters!**

14:00 16:00	<b>Poster Session</b>	David Levacq (ESA)
	<b>Space Applications</b>	
I	<i>Multi-Channel Preamplifier IC for IR-Sensor and FPA Readout</i>	Jörg Ackermann
II	<i>A rad-hard signal conditioning ASIC for space grade transducers</i>	Dimitris Mitrovgenis, Theodoros Athanasopoulos
	<b>Radiation Testing and Mitigation</b>	
III	<i>The First SEE Tests Campaign in Turkey at the METU Defocusing Beamline Preliminary Setup</i>	Mehmet Serdar
IV	<i>Heavy Ion Test Results of Different Analog to Digital Converters</i>	Sergei Iakovlev
V	<i>Radiation Tolerant Stochastic Fourier-Transformation Implementation</i>	Kris Niederkleine
	<b>Custom Cell-, Circuit-, and System Design</b>	
VI	<i>Radiation-Hard X-Band Phase Locked Loop and Transceiver in 0.25 <math>\mu\text{m}</math> SiGe Technology</i>	Dr. Wojciech Debski
VII	<i>SEPHY: a 10/100 Ethernet Transceiver for Space Applications</i>	Jesús F. López-Soto
VIII	<i>Radiation Hardened Pulse Width Modulator in CMOS-SOI</i>	Dimitrios Baramilis



Tuesday, 14:00 – 16:00

## Industrial Presentations

Hilde Derdin (Imec)

1	Microchip	Erwann Berlivet Pascale Charpentier	9	Teledyne e2v	Dr. Romain Pilard, Joseph Yeomans, Kurt Rentel, Nicolas Chantier
2	Alter Technology	Dr. Sonia Vargas-Sierra Xavier Wiedemann	10	Serma/HCM.Systrel	Frédéric Oudart Maxence Leveque
3	Cobham	Teresa Farris Christian Sayer	11	Thales Alenia Space Belgium	Alain van Esbeen Marc Fossion
4	Cobham	Fredrik Johansson Teo DeLellis	12	Microtest	Moreno Lupi Francesco Parenti
5	Microsemi	Dorian Johnson Mathieu Sureau	13	Renesas	Oscar Mansilla Christophe Boucheron
6	Micross	Ian Robinson	14	IHP	Judith Kroel Dr. Jens Schmidt
7	Arquimea	Ferran Tejada Daniel Gonzalez	15	TRAD	Christian Chatry
8	Magics	Jens Verbeeck Dr. Ying Cao	16	Imec	Ozgur Gursoy Geert Thys



Tuesday, June 19, 09:15

## ***Functional Safety Management in the automotive world and beyond?***

Yves Renard, ON Semiconductor

Wednesday, June 20, 09:00

## ***Perspectives for Disruptive GaN Power Device Technology***

Stefaan Decoutere

- Laurent Berti  
(Imec)
- Franco Bigongiari  
(Sitael S.p.A.)
- Steven Redant  
(Imec)
- Volker Lück  
(Tesat)
- Geert Thys  
(Imec)
- Richard Jansen  
(ESA)
- Boris Glass  
(ESA)
- David Dangla  
(CNES)
- David Levacq  
(ESA)

## **Radiation Effects on analogue and mixed-signal ICs**

Dr. Sebastian Millner (Tesat-Spacecom)

## **Custom Cell-, Circuit-, and System Design**

Marc Fossion (Thales Alenia Space Belgium)

Michael Kakoulin (IMEC)

Florence Malou (CNES)

## **Evaluation and Qualification**

Dieter Herrmann (DLR)

## **Space Applications**

Jose F. Moreno-Alvarez (Airbus Defence and Space)

Jörg Ackermann (Integrated Detector Electronics AS)

## **Radiation Hardened Technologies**

Dr. Constantin Papadas (ISD SA)

Franco Bigongiari (Sitael S.p.A.)

Frank Henkel (IMST)

## **Poster Session**

David Levacq (ESA)

# Organizing Committee



- Imec
  - Steven Redant
  - Hilde Derdin
  
- ESA
  - David Levacq
  - Richard Jansen
  - Boris Glass





# Radiation Effects on analogue and mixed-signal Ics

Convener: Dr. Sebastian Millner

09:45	<i>Single Event Effects Analysis in ReadOut Integrated Circuits at Cryogenic Temperatures</i>	Laurent Artola (ONERA)
10:10	<i>Static Linearity Test for Radiation Effects Characterization of an 18-bit SAR Serial IO COTS ADC: Analog Devices AD7982</i>	Dr. Sonia Vargas-Sierra (Alter Technology)
10:35	<i>Validation of a High Resolution ADC for Space Applications</i>	Kostas MAKRIS (ISD S.A)
11:00	Coffee break	



# Custom Cell-, Circuit-, and System Design: (1/3)

Convener: Marc Fossion

11:20	<i>Rad-Hard Telemetry and Telecommand IC suitable for RIU, RTU and ICU Satellite Subsystems</i>	Ernesto Pun (Arquimea)
11:45	<i>Microchip ATMX150RHA European Mixed Technology for Advanced Designs SAMRH71</i>	Hans-Ulrich Zurek (Microchip)
12:10	<i>Status update on GR716 Rad-Hard Microcontroller For Space Applications</i>	Fredrik Johansson (Cobham Gaisler)
12:35	Lunch	



	<b>Evaluation and Qualification</b> Convener: Dieter Herrmann	
14:00	<i>Re-Thinking Reliability Analysis</i>	Art Schaldenbrand (Cadence Design Systems)
14:25	<i>Digital Programmable Controller (DPC): radhard die in low cost plastic package</i>	Alain van Esbeen, Marc Fossion (Thales Alenia Space Belgium)
14:50	<i>ESCC Single Phase Qualification</i>	Fernando Martinez (ESA)
15:15	<i>Characterization, Screening and Qualification of the MEDA Wind-Sensor ASIC</i>	Servando Espejo (IMSE-CNM-CSIC / Universidad de Sevilla)
15:40	Coffee break	



## Custom Cell-, Circuit-, and System Design: (2/3)

Convener: Michael Kakoulin

16:00

*A radhard LVDS chip: transistor level design aspects*

Jan Wouters  
(IMEC)

16;25

*Correlators for Interferometric Radiometry in Remote Sensing Applications, A Scaling Perspective*

Erik Ryman  
(Omnisys  
Instruments AB)

## Social Program

16:50

Guided Tour

*Leuven*

19:00

Welcome Reception

*Leuven city hall*



## Keynote Speech

09:15 *Functional Safety Management in the automotive world and beyond?*

Yves Renard  
(ON Semiconductor)

**Space Applications: (1/2)**  
Convener: Jose F. Moreno-Alvarez

10:00 *SIS20: A CMOS ASIC for Solar Irradiance Sensors in Mars Surface*

Prof. Vázquez Diego  
(IMSE-CNM-CSIC / University of Seville)

10:25 *Ultimate earth observation using time delay integration line scan imagers using the CCD-in-CMOS technology*

Piet de Moor  
(Imec)

10:50 Coffee break



## Space Applications: (2/2)

Convener: Jörg Ackermann

11:20	<i>Channeltron Detector Readout ASIC in 0.35<math>\mu</math>m HV CMOS for Cold Solar Wind Analysis</i>	King Wah Wong (IRAP CNRS) Prof. H�el�ene Tap (INP-ENSEEIH LAAS)
11:45	<i>A Fault Tolerant PMAD System Using Radiation Hardened Highly Integrated AFE Integrated Circuits</i>	Mathieu Sureau (Microsemi Corp.)
12:10	<i>A rad-hard systems-on-chip solution for close-loop motor control</i>	Dr. Ying Cao (MAGICS Instruments)
12:35	Lunch	



14:00 16:00	<b>Poster Session</b>	David Levacq (ESA)
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	<b>Custom Cell-, Circuit-, and System Design: (3/3)</b> Convener: Florence Malou	
16:00	<i>Prototype of a multi-mode C-Band capable 12-bit 1.5/3/6 GSps Quad ADC in flip-chip non-hermetic technology</i>	Dr. Romain Pilard (Teledyne e2v)
16:25	<i>Atom-Switch FPGA for IoT Sensing System Application</i>	Dr. Toshitsugu Sakamoto (NEC Corporation)
16:50	<i>Robust CMOS time-based sensor interfaces for space applications presenter</i>	Jorge Marin (KU Leuven)
19:00	<b>Conference Dinner</b>	<i>Faculty Club</i>



## Keynote Speech

09:00

Perspectives for Disruptive GaN Power Device Technology

Stefaan Decoutere  
(IMEC)



# Radiation Hardened Technologies: (1/3)

Convener: Dr. Constantin Papadas

09:45	Microchip ATMX150RHA Rad-Hard CMOS 150nm cell based ASIC family Radiation Characterization Test Report Total Dose (TID) and Single Event Effects (SEE)	Eric Leduc (Microchip)
10:10	DARE180U platform improvements in release 5.6	Giancarlo Franciscatto (Imec)
10:35	The Design Against Radiation Effects (DARE) design platform for TSMC 65nm process.	Michael Kakoulin (Imec)
11:00	Coffee break	



	<b>Radiation Hardened Technologies: (2/3)</b> Convener: Franco Bigongiari	
11:20	<b>Invited Talk:</b> Overview of ST Space Qualification in 28nm-FDSOI	Dr. Gilles Gasiot (ST Radiation Team Crolles)
11:45	ATMX150RHA Circuit Design Platform	Erwann Berlivet (Microchip)
12:10	DARE SET Simulation Flow Integrated in Virtuoso ADE L/XL Design Environment	Staf Verhaegen (Imec)
12:35	Lunch	



## Radiation Hardened Technologies: (3/3)

Convener: Frank Henkel

14:00	ESS180RH: An 180nm digital library addressing Single Event Latch-up based on X-FAB XH018	Dimitris Mitrovgenis Theodoros Athanassopoulos (European Sensor Systems)
14:25	Mixed-Signal Test Vehicle in Microchip Atmel ATMX150RHA	Julien Fleury (Weeroc)
14:50	DARE180U New Analog IPs	Laurent Berti (Imec)
15:15	<b>Wrap-Up and Finish</b>	Boris Glass (ESA) Steven Redant (Imec)



