

Workshop Program

Sunday, June 20, 2010

18:30 Welcome Drink

Monday, June 21, 2010

08:30 Registration

09:30 Welcome and Introduction

10:00 Coffee Break

10:30 Session I – Cryogenic Imaging

12:00 Lunch

14:00 Session II – Multiple Gate Devices

15 :30 Coffee Break

16 :00 Session III – Analog Devices and Circuits I

Tuesday, June 22, 2010

08:30 Session IV – Semiconductor Devices

10:00 Coffee Break

10:30 Session V – Analog Devices and Circuits II

12:00 Lunch

14:00 Free time

19:30 Conference Dinner

Wednesday, June 23, 2010

08:50 Session VI – Cryogenic Systems

10:00 Coffee Break

10:30 Session VII – Device Simulation

12:00 Lunch

14:00 Session VIII – Quantum Detector and Detector Readout

14:40 Coffee Break

15:10 WOLTE 9 Concluding Remarks

Technical Program

Monday, June 21, 2010

Session I - Cryogenic Imaging

Terahertz Object Recognition for Security Screening Applications - *Invited Paper*

10:30 – 11:10 Hans-Georg Meyer¹, Torsten May¹, Gabriel Zieger¹, Solveig Anders¹, Vyatcheslav Zakosarenko¹, Marco Schubert², Michael Starklo²

¹Institute of Photonic Technology (IPHT), Germany, ²Supracon AG, Germany

Quantum Well Infrared Photodetector Dark Current and Temperature

11:10 – 11:30 Luis Felipe M. Nohra¹, Fabio D. P. Alves¹, Lester A. Faria¹, Nathan Hanson² and Gamani Karunasiri²

¹Instituto Tecnológico de Aeronáutica, Brazil, ²Naval Postgraduate School, U.S.A

GaAs-JFET cryogenic readout module for superconducting THz imaging arrays

11:30 – 11:50 Hiroshi Matsuo¹, Yasunori Hibi¹, Hirohisa Nagata², Hirokazu Ikeda² and Mikio Fujiwara³.

¹National Astronomical Observatory of Japan, Japan, ²Institute of Space and Astronautical Science, Japan, ³National Institute of Information and Communications Technology, Japan

12:00 – 14:00 Lunch

Session II - Multiple Gate Devices

Low temperature Characterization of different deep submicron SOI and FinFET Devices

14:00 – 14:20 Jalal Jomaah, Kamal Bennamane, Francis Balestra and Gérard Ghibaudo.

IMEP/Minatec, France

SEG and Uniaxial Strain influence on FinFET Performance at Low Temperature

14:20 – 14:40 Paula Agopian¹, Vinicius Pacheco², João Martino², Eddy Simoen³ and Cor Claeys³.

¹Centro Universitário da FEI, Brazil, ²LSI/PSI/USP, Brazil, ³IMEC, Belgium

Low Temperature Behavior of Junctionless Multiple Gate nMOSFETs

14:40 – 15:00 Michelly de Souza¹, Marcelo Pavanello^{1,2}, Chi-Woo Lee³, Rodrigo Doria², Isabelle Ferain³, Ran Yan³, Ran Yu³, Nima Dehdashti-Akhavan³, Pedram Razavi³ and Jean-Pierre Colinge³.

¹Centro Universitário da FEI, Brazil, ²LSI/PSI/USP, Brazil, ³Tyndall National Institute, Ireland

Low-Temperature Operation of Triple-Gate P-Channel FinFETs: Impact of Fin Width and Channel Separation

15:00 – 15:20 Carolina Davanzo G. dos Santos¹, Sorin Cristoloveanu² and João Antonio Martino¹.

¹LSI/PSI/USP, Brazil, ²IMEP-INPG MINATEC, France

15:30 – 16:00 Coffee Break

Session III - Analog Devices and Circuits I

- 16:00 – 16:20 Several Issues for Analog Design with a 0.18 μm CMOS Technology at Low Temperature
Patrick Martin¹, Anne-Sophie Royet¹, Mickael Cavelier¹, Raphael Fascio¹ and Gérard Ghibaudo²
¹CEA LETI - MINATEC, France, ²IMEP LAHC - MINATEC, France
- 16:20 – 16:40 A Cryogenic Sigma-Delta Modulator in a Standard CMOS Technology
Burak Okcan¹, Georges Gielen² and Chris Van Hoof¹.
¹IMEC, Belgium, ²K. U. Leuven, Belgium
- 16:40 – 17:00 Broadband MMIC Amplifier for Superconducting Single Photon Detector Readout in a Cryogenic Environment
Daniel Bruch¹, Ingmar Kallfass¹, Beatriz Aja¹, Arnulf Leuther¹, Matthias Seelmann-Eggebert¹, Hermann Maßler¹, Erich Crocoll¹, Stefan Wünsch², Michael Siegel², Michael Schlechtweg¹ and Oliver Ambacher¹.
¹Fraunhofer Institute for Applied Solid State Physics IAF, Germany, ²Karlsruher Institute of Technology - Institut für Mikro- und Nanoelektronische Systeme, Germany
- 17:00 – 17:20 Analog Performance at low temperatures in FinFETs: Bulk, DTMOS, BOI and SOI
Maria Andrade and João Martino.
LSI/PSI/USP

Tuesday, June 22, 2010

Session IV - Semiconductor Devices

- 08:30 – 09:10 Electrical Characterization of Tunneling-Dielectric TFT at Low Temperatures - **Invited Paper**
Prof. Naoto Matsuo
University of Hyogo, Japan
- 09:10 – 09:30 Low Temperature Characterization and Transport Study of FDSON MOSFETs
Subramanian N¹, Gérard Ghibaudo¹, Mireille Mouis¹, Gregory Bidal² and Frederic Boeuf²
¹IMEP LAHC - MINATEC, France, ²ST Microelectronics, France
- 09:30 – 09:50 Modeling SOI PIN diodes at low temperature by a double exponential with series resistance
Denise Lugo Muñoz¹, Adelmo Ortiz-Conde¹, Francisco García Sánchez¹, Juan Muci¹, Michelly de Souza², Denis Flandre³ and Marcelo Pavanello².
¹Universidad Simón Bolívar, Venezuela, ²Centro Universitário da FEI, Brazil, ³UC Louvain, Belgium
- 10:00 – 10:30 Coffee Break

Session V - Analog Devices and Circuits II

10:30 – 10:50	MOS Transistor Matching at Low Temperature for Analog Circuit Design Patrick Martin ¹ , Anne-Sophie Royet ¹ and Gérard Ghibaudo ² . ¹ CEA LETI - MINATEC, France, ² IMEP LAHC - MINATEC, France
10:50 – 11:10	Analog application of SOI nFinFETs with different TiN gate electrode thickness operating at cryogenic temperatures Michele Rodrigues ¹ , Milene Galeti ^{1,2} , Nadine Collaert ³ , Eddy Simoen ³ , Cor Claeys ³ and João Antonio Martino ¹ ¹ LSI/PSI/USP, Brazil, ² Centro Universitário da FEI, Brazil, ³ IMEC, Belgium
11:10 – 11:30	Harmonic Distortion of Strained Triple-Gate FinFETs at Low Temperatures Rodrigo T. Doria ¹ , João A. Martino ¹ , Eddy Simoen ² , Cor Claeys ² and Marcelo A. Pavanello ^{1,3} . ¹ LSI/PSI/USP, Brazil, ² IMEC, Belgium, ³ Centro Universitário da FEI, Brazil
11:30 – 11:50	Comparison of Series Association of Standard SOI MOSFET at Low Temperatures Ingrid Santos, Michelly de Souza and Marcelo Antonio Pavanello Centro Universitário da FEI, Brazil

Wednesday, June 23, 2010

Session VI - Cryogenic Systems

08:50 – 09:10	Low Temperature Operation of a Microbolometer Array for Terahertz Detection Abdu Orduña-Díaz ^{1,2} , Francisco-j De La Hidalga-w ¹ , Alfonso Torres-J ¹ , Marlon Rojas-López ² , Raúl Delgado-Macuil ² , Valentín López-Gayou ² , Ignacio Juárez-R ¹ and Carlos G. Treviño-Palacios ¹ ¹ INAOE, Mexico, ² Centro de Investigación en Biotecnología Aplicada del IPN, Mexico
09:10 – 09:30	Development of cryogenic far IR Ge:Ga photoconductor array for SAFARI instrument Ybe Creten ¹ , Burak Okcan ¹ , Mai Shirahata ² , Shuhei Kamiya ³ , Shuji Matsuura ² , Yasuo Doi ³ , Mitsunobu Kawada ⁴ and Chris Van Hoof ¹ . ¹ IMEC, Belgium, ² ISAS/JAXA, Japan, ³ University of Tokyo, Japan, ⁴ Nagoya University, Japan
09:30 – 09:50	Commercially Available Capacitors at Cryogenic Temperatures Florent Teyssandier and Damien Prele APC - CNRS/Univ. Denis Diderot, France
10:00 – 10:30	Coffee Break

Session VII - Device Simulation

10:30 – 10:50 Comparison Between the Low-Frequency Noise in Graded-Channel SOI nMOSFETs and Conventional SOI nMOSFET at Low Temperatures

Eduardo Luiz Ronchete da Silva and Marcelo Antonio Pavanello
Centro Universitário da FEI

10:50 – 11:10 Analog Operation of Non-Rectangular Channel Shape FinFETs at Low Temperature

Rudolf Bühler¹, Renato Giacomini² and João Martino¹.
¹LSI/PSI/USP, Brazil, ²Centro Universitário da FEI, Brazil

11:10 – 11:30 Channel Length Influence on Threshold Voltage Variation with the Temperature in Strained and Unstrained nFinFETs

Renan Doria¹ and Marcelo Pavanello^{1,2}
¹LSI/PSI/USP, ²Centro Universitário da FEI, Brazil

11:30 – 11:50 TCAD simulation of temperature influence in FD SOI MOSFET under uniaxial mechanical stress

Márcio Alves Sodré de Souza and Marcelo Antonio Pavanello.
Centro Universitário da FEI, Brazil

12:00 – 14:00 Lunch

Session VIII - Quantum Detector and Detector Readout

Losses in Coplanar Waveguide Resonators at Millikelvin Temperatures

14:00 – 14:20 Pascal Macha¹, S.H.W. van der Ploeg¹, G. Oelsner¹, E. Il'ichev¹, H.-G. Meyer¹, Stefan Wünsch² and Michael Siegel².

¹Institute of Photonic Technology (IPHT), Germany, ²Karlsruher Institute of Technology - Institut für Mikro- und Nanoelektronische Systeme, Germany

14:20 – 14:40 Josephson-Junction Array Structures Providing Linear Voltage Response

Victor Kornev¹, Igor Soloviev¹, Nikolay Klenov¹ and Oleg Mukhanov².
¹Physics Department, Moscow State University, Russian Federation, ²Hypres, U.S.A.

14:40 – 15:10 Coffee Break

15:10

WOLTE 9 Concluding Remarks