

11th Workshop on Low temperature Electronics (WOLTE 11)
Minatec/INPG, Grenoble, 7-9 July 2014
Tuesday, 8 July

8h40: Opening address, F. Balestra

Session 1 “Semiconductor detectors”, Chair: R. Kirschman

- 8h50: HgCdTe Avalanche photodiode: application for Infra-Red detection, **invited paper**
J. Rothmann, CEA-LETI, Grenoble, France
- 9h30: Modeling and characterization of MTF at small pitch on Mercury Cadmium Telluride
J. Berthoz¹, L. Rubaldo¹, R. Grille¹, O. Gravrand², SOFRADIR, 92290 Châtenay-Malabry, France, CEA LETI, Grenoble, France
- 9h50: Defects study in IR SWIR HgCdTe photodetectors using DLTS
A. Brunner, L. Rubaldo, J. Berthoz, D. Bauza, G. Reimbold, SOFRADIR, 92290 Châtenay-Malabry, IMEP-LAHC, MINATEC-INPG, CEA-LETI, Grenoble France
- 10h10: Development of NTD Ge sensors for low temperature thermometry
S. Mathimalar, V. Singh, N. Dokania, V. Nanal, R.G. Pillay, S. Pal, S. Ramakrishnany, A. Shrivastava, Priya Maheshwar, P.K. Pujar, S. Ojha, D. Kanjilal, K.C. Jagadeesan, and S.V. Thakare, India based Neutrino Observatory, Tata Institute of Fundamental Research, yHomi Bhabha National Institute, Department of Nuclear and Atomic Physics, Tata Institute of Fundamental Research, Department of Condensed Matter Physics, Tata Institute of Fundamental Research, India, Nuclear Physics Division, Bhabha Atomic Research Centre, Radiochemistry Division, Bhabha Atomic Research Centre, India, kInter University Accelerator Centre, Isotope Applications & Radiopharmaceuticals Division, Bhabha Atomic Research Centre, India.

10h30: Coffee break

Session 2 “Semiconductor devices and circuits (1)”, Chair: L. Rubaldo

- 11h00: A single-stage cryogenic LNA with low power consumption using a commercial SiGe HBT
H. Mani, P. Mauskopf, School of Earth and Space Exploration, Arizona State University, Tempe, AZ, USA
- 11h20: Ultra-low noise HEMTS for high-impedance and low frequency preamplifiers: Realization and characterization from 4.2K to 77K
Q Dong, YX Liang, A Cavanna, U Gennser, L Couraud, C Ulysse, Y Jin, CNRS/LPN, Marcoussis, France
- 11h40: Cryogenic GaN/AlGaIn HEMT ICs and Fabrication Probability of Monolithic Sensor of Super- and Semiconductor Device
Y. Hibi, J. Sun, H. Qin, H. Matsuo, L. Kang, J. Chen, and P. Wu, Research Institute of Superconductor Electronics (RISE), Nanjing University, China, Suzhou Institute of Nano-Tech and Nano-Binics (SINANO), Chinese Academy of Science (CAS), China, National Astronomical Observatory of Japan (NAOJ), Japan
- 12h00: Low temperature characterization of 14nm FDSOI CMOS devices
M. Shin, M. Shi, M. Mouis, A. Cros, E. Josse, G.T. Kim and G. Ghibaudo, IMEP-LAHC, Grenoble INP, France, STMicroelectronics, Crolles, France, School of Electrical Engineering, Korea University, 136-701, Seoul, South Korea

12h30: Lunch

Session 3 “Superconductor circuits and devices”, Chair: P. Febvre

- 13h50: Real-time multi-pixel readout of superconducting nanowire single-photon detectors, **Invited paper**
M. Hofherr, K. Ilin, J. Toussaint, T. Ortlev, O. Wetzstein, S. Engert, H.-G. Meyer, H.s Töpfer, M. Siegel, Institute of Micro- und Nanoelectronic Systems, Karlsruhe Institute of Technology, Karlsruhe, Department of Quantum Detection, Institute of Photonic Technology, Jena, CiS Forschungsinstitut für Mikrosensorik und Photovoltaik, Erfurt, Department of Advanced Electromagnetics, Ilmenau University of Technology, Ilmenau, Germany
- 14h30: Digital Controlling of Superconducting Current Steering Switches
O. Brandel, J. Kunert, T. May, T. Ortlev, H. Toepfer and H.-G. Meyer, Leibniz Institute of Photonic Technology (IPHT Jena), CiS Research Institute for Microsensor Systems and Photovoltaics ‡Ilmenau University of Technology, Germany
- 14h50: Superconductor digital electronics technology for sensor interfacing at the FLUXONICS Foundry
J. Kunert, O. Brandel, S. Linzen, T. May, R. Stolz, and H.-G. Meyer, Department of Quantum Detection, Leibniz Institute of Photonic Technology, IPHT, Jena, Germany
- 15h10: Dielectric losses in multi-layer Josephson junction qubits
D. Gunnarsson, J.-M. Pirkkalainen, J. Li, G. Sorin Paraoanu, P. Hakonen, M. Sillanpää, and M. Prunnila, VTT Technical Research Centre of Finland, Espoo, Finland, O V Lounasmaa Laboratory, Aalto University, Espoo, Finland, Department of Applied Physics, Aalto University, Espoo, Finland

15h30: Coffee break

- 16h00: On the Possibility of Creating Superconducting Spin Valve of a New Type
Y. Goryunov, Laboratory of Advances Materials Physics, E.K. Zavoisky Physical Technical Institute, KPTI FASO, Kazan, Russia
- 16h20: Development of Design Tools for Superconducting Integrated Circuits for Large Scale Detector Read-out
A.Bozbey, M. Eren Çelik, S. Razmkhah, C. Alp Tunc, Department of Electrical and Electronics Eng. TOBB ETU, Ankara, Ankara Research and Technology Laboratory, ARTLAB Ltd, Ankara, Turkey
- 16h40: Simulations of rapid single-flux-quantum digital circuits in presence of external magnetic fields
R. Collot and P. Febvre, IMEP-LAHC, Technolac, Bourget du Lac, France

17h00: Exhibition on IR detectors by SOFRADIR

20h00: Gala Diner Bastille Le Père Gras

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Session 4 “Semiconductor devices and circuits (2)”, Chair: J. Rothmann

- 8h50: Quantum Hall Effect and Magneto-transport in semiconductor structures, **Invited paper**
D. Maude, CNRS, Toulouse, France
- 9h30: Analog Operation of Junctionless Nanowire Transistors down to Liquid Helium Temperature
R. Trevisoli, M. de Souza, R. T. Doria, V. a Kilchtyaska, D. Flandre, and M. A. Pavanello¹, Centro Universitário da FEI: Electrical Engineering Department, Brazil, Université Catholique de Louvain: ICTEAM Institute, Belgium
- 9h50: High Performance SiGe Nanowire Tunnel FETs: Low Temperature Characterization for Device Process Optimization
A Villalon, A Revelant, C Le Royer, P Nguyen, L Selmi and S Cristoloveanu, CEA, LETI Grenoble, France, DIEGM, University of Udine, Italy, SOITEC, Bernin, France, IMEP-LAHC, INP-Grenoble, France
- 10h10: Asymmetric Self-Cascode FD SOI nMOSFETs Harmonic Distortion at Cryogenic Temperatures
L. Martins d’Oliveira, R. Trevisoli Doria, M. A. Pavanello, M. de Souza, V. Kilchtyaska and D. Flandre, Electrical Engineering Department, Centro Universitário da FEI, Brazil, ICTEAM Institute, UCL, Belgium

10h30: Coffee break and poster session

Session 5 “Semiconductor devices”, Chair: D. Maude

- 11h00: Porous silicon for efficient on-chip thermal isolation in the temperature range 5-300K
K. Valalaki and A.G. Nassiopoulou, NCSR “Demokritos”/INN, Athens, Greece
- 11h20: Spectroscopic Analysis of Leakage Current of Pre- and Post-Stressed Sol-Gel-Based TiO₂ and SiO₂/TiO₂ Stack Films
Y. Omura and Y. Kondo, ORDIST, Kansai University, Dept. Electrical, Electronics and Informatics, Kansai University, Grad. School of Sci. and Eng., Kansai University, Japan
- 11h40: Characterization and Modeling of Resistive-Transition Phenomena and Electronic Structure of Sputter-Deposition SiO₂ Films
R. Yamaguchi, S. Sato, Y. Omura and K. Nakamura, Grad. School Sci. and Eng., Kansai University, Japan
- 12h00: Low temperature characterizations of suspended CVD graphene devices fabricated with a scalable process route
O. I. Aydin, T. Hallam, M. Mouis, B. Piot, J.L. Thomassin and G. Duesberg, IMEP-LAHC, Grenoble INP, France, CRANN Trinity College, Dublin Ireland, LNCMI, CNRS-UJF-INSA-UPS, Grenoble France, SPSMS, CEA-INAC, Grenoble France

12h30: Lunch

Session 6 “Detectors”, Chair: M. Hofherr

- 13h50: New concepts in Infrared bolometry, **Invited paper**
E. Parker and D. Leadley, University of Warwick, UK
- 14h30: VTT Kinetic Inductance Bolometer Arrays for THz camera
A. Timofeev, J. Hassel, V. Vesterinen, P. Heliöstö, L. Grönberg, VTT Technical Research Centre of Finland, Finland
- 14h50: Strain and Interface Engineered Semiconductor-Superconductor Coolers and Detectors
D. Gunnarsson, J. Richardson-Bullock, M. J. Prest, M. A. Timofeev, T. Brien, M. Kiviranta, T. E. Whall, E. H. C. Parker, D. R. Leadley, P. Mauskopf, and M. Prunnila, VTT Technical Research Centre of Finland, Finland, Department of Physics, University of Warwick, UK, School of Physics and Astronomy, Cardiff University, UK
- 15h10: Experimental estimation of optical NEP of 350GHz CEB bolometer
A. S. Mukhin, A. E. Abashin, O. S. Bolshakov, I. V. Lesnov, A. y A. Shishov, Nizhny Novgorod State Technical University, Nizhny Novgorod, Russia
- 15h30: Study of the behavior of Cross-talk in Hilbert KID array using Sonnet software
A. Adane, G. Coiffard, M. Calvo, J. Goupy, C. Hoarau, S. Leclercq, A. Monfardini, K.F. Schuster, Institute de Radioastronomie millimétrique, IRAM, Grenoble, France, Institut Néel-CNRS, Grenoble, France

16h00: Closing address

Poster session

P1 : Low-temperature characterization of Hall and effective mobility in junctionless transistors

M.-K. Joo, M. Mouis, B. Piot, S. Barraud, M. Shin, G.-t. Kim, and G. Ghibaudo, IMEP-LAHC, Grenoble INP, France, School of Electrical Engineering, Korea University, South Korea, 3 CNRS-LNCMI, Grenoble, France, CEA-LETI Minatec, Grenoble, France