Infra Red Detection
Workshop

3 - 4 - 5 July 2018

INFRARED DETECTION FOR SPACE APPLICATIONS

PROGRAM

Issue 2.1 (22/05/18)

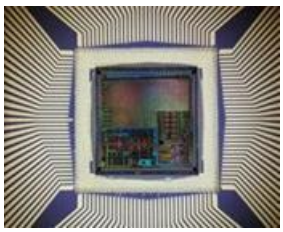
3 – 4 – 5 July 2018

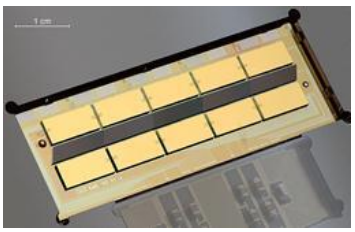
TOULOUSE, FRANCE

CLS Auditorium

8-10, rue Hermès - Parc Technologique du Canal - Ramonville Saint-Agne

Co-organised by CNES, ESA, Labex Focus
AIRBUS DEFENCE & SPACE, THALES ALENIA SPACE, CEA/LETI





Infra Red Detection Workshop

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CNES, ESA, Airbus Defence & Space, Thales Alenia Space, CEA/LETI, and Labex Focus are pleased to invite you to a workshop dedicated to Infrared Detection for Space Applications, that will be held in Toulouse on the 3rd, 4th and 5th of July 2018 within the framework of the Optics and Optoelectronics Technical Expertise Community (COMET – formerly CCT).

The aim of this workshop is to focus on Infrared Detector technologies and components, Focal Plane Arrays and associated subsystems, control and readout ASICs, characterization and qualification results. The workshop will address only IR spectral bands between 1µm and 100 µm (excluding heterodyne detection).

Due to the commonalities with Space Applications and the increasing interest of Space agencies to qualify and to use COTS IR Detectors, Companies and Laboratories involved in Defence applications, Scientific applications and non Space Cutting Edge developments are also very welcome to this workshop.

Workshop official language

Oral presentation will be requested for the workshop. The official language for the workshop is English.

Oral presentations

The authors are requested to prepare their presentation in PDF or PowerPoint format (4/3), to be presented at the Workshop. Presentations shall be limited to 20 minutes + 5 minutes for questions. The presentations must be received before the 2d of July. (alain.bardoux@cnes.fr)

The authors are also requested to give a non-confidential copy of the slides to the organization committee with an authorization to make it available on-line for the COMET members.

Registration:

The workshop is sponsored by CNES, ESA, Labex FOCUS, AIRBUS DEFENCE & SPACE and THALES ALENIA SPACE. A fee of 25€/day will be due from each attendee (including speakers) for meal expenses.

On line registration : https://evenium.net/ng/person/event/website.jsf?eventId=infrared-detection-for-space-applications&page=tickets&loc=en&justSubmit=false&cid=208659

This online registration requires several steps

- On line Pre-registration
- You will be notified that the pre-registration is accepted and invited to pay for the fees by credit card
- You will be notified that the registration is completed and will received an invoice

Schedule

June 25th:	Final program
June 30th:	**Deadline for registration**
July 3rd:	Workshop

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Organization committee

CNES	**Alain Bardoux**	alain.bardoux@cnes.fr
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Contact : alain.Bardoux@cnes.fr

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Tuesday July 3rd - Program

9h30		welcome	Alain BARDOUX (CNES)
session 1 : On-going and future mission technology review Chairman : Nick NELMS (ESA)			
9h45	1.1	CNES IR detector developments for space missions: status and roadmap	Hervé GEOFFRAY (CNES)
10h10	1.2	The status of European Space Agency supported infrared detector developments	Nick NELMS (ESA)
10h35	break		
11:05	**Tutorial**	**2-6 or 3-5's for quantum IR imaging ? Is it a simple question of columns or figures?**	**Olivier GRAVRAND (CEA-LETI)**
12h05	1.3	Development status of NIR to VLWIR IR detectors integrated within under development space optical payloads and recommendations for future space programs	Michel BREART (ADS)
12h30	lunch		
14h00	1.4	Infra Red Detection at Thales Alenia Space : from past to on-going developments and interests	Thierry DARTOIS (TAS)
14h25	1.5	Latest advances in cooled and un-cooled infrared detection technology at Leonardo MW	Keith BARNES (Leonardo MW)
14h50	1.6	Teledyne's High Performance Infrared Detectors for Space Missions	James BELETIC (Teledyne Imaging System)
15h15	1.7	Ground based Infrared detector and camera system developments at ESO for the next generation of telescopes and instruments	Derek IVES (ESO)
15h40	1.8	The Infra-Red Telescope on board the THESEUS mission	Diego GÖTZ (CEA-IRFU)
16h05	break		
16h35	1.9	Constraints on the Infrared Technologies for Land and Airborne Defense applications	Eric BELHAIRE (Thales LAS)
Session 2 ROIC and SFD detectors Chairman : Hervé GEOFFRAY (CNES)			
17h00	2.1	Detector chain calibration for the Euclid flight IR H2RGs	Rémi BARBIER (IPNL)
17h25	2.2	Characterization of H2RG flight detectors in preparation of the Euclid mission: testflow and the initial results	Aurelia SECROUN (CPPM)
17h50	2.3	Low temperature dark current sources in HgCdTe detector and implication in SFD ROIC architecture	Cyril CERVERA (CEA)
18h15	cocktail		

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Wednesday July 4th - Program

Session 2 (following) ROIC and SFD detectors Chairman : Hervé GEOFFRAY (CNES)			
8h35	2.4	Modelling of luminescence induced by proton irradiation in space environment. HgCdTe infrared detector array in space environment	Thibault PICHON (CEA-IRFU)
09h00	2.5	Update of SEE Radiation Hardness Assurance of Readout Integrated Circuit of Infrared Image Sensors at Cryogenic temperatures	Laurent ARTOLA (ONERA)
09h25	2.6	Recent advances in compact ("SPICE") modeling of integrated semiconductor devices at cryogenic temperatures for defense and space	Bertrand ARDOUIN (XMOD Technologies)
09h50	2.7	Real-time Ultra-High Dynamic Range InfraRed Imaging	David DARSON (ENS)
10h15	2.8	A VGA 18 bit digital output CMOS ROIC for shutterless uncooled LWIR 17µm VOx microbolometer FPAs	Sander GIERKINK (Teledyne Dalsa)
10h40	break		
11h10	**Tutorial**	**Type II superlattice detectors – detector physics and current state-of-the-art**	**Linda HÖGLUND (IRnova AB)**
Session 3 MWIR-LWIR detectors Chairman : Thierry DARTOIS (TAS)			
12h10	3.1	Issues with Aquarius detector for METIS, the mid-infrared instrument of ELT	Salima MOUZALI (CEA-IRFU)
12h35	lunch		
14h00	3.2	METimage infrared detectors development and first results	Laurent VIAL (Sofradir)
14h25	3.3	Si:As detector characterization for JWST MIRI	Daniel DICKEN (CEA-IRFU)
14h50	3.4	Improved Low Dark Current MWIR/LWIR MCT Detectors: first results of ROIC and MCT tests	Holger HÖHNEMANN (AIM)
15h15	3.5	HgCdTe *p*-on-*n* technology for space applications	Nicolas PÉRÉ-LAPENNE (Sofradir)
15h40	3.6	MW and LW infrared detectors based on III-V semiconductors for space applications	Lidia LANGOF (SCD)
16h05	break		
16h35	3.7	Electrical and electro-optical characterizations of LWIR/VLWIR T2SL barrier photon-detector	R ALCHAAR Montpellier University
17h00	3.8	Characteristics of type-II superlattices – a promising material for space applications	Volker DAUMER (Fraunhofer-IAS)
17h25	3.9	Sun Exposure Damage to a Microbolometer in Low Earth Orbit	M. Henry ROSS (NASA-GSFC)
17h50	3.10	High Reliability Packages for Thermal Imaging in Space	G Chretien (Egide)
18h15		End of the day	

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Thursday July 5th - Program

Session 4 Detector Characterization chairman : Olivier GRAVRAND (CEA-LETI)			
08h35	4.1	Operating Life Tests at cryogenic temperature: Tools, Methodology and Results	Franck PERRIER (SOFRADIR)
09h00	4.2	Comparison between Dark Current Random Telegraph Signal Characteristics in Several Technologies of Solid State Image Sensors	Clémentine DURNEZ (ISAE)
9h25	4.3	A linear treatment for 2D MTF and pixel spatial response recovery from sparse measurement	Edouard HUARD (ONERA)
9h50	4.4	Crosscorrelating effects in the Sofradir Neptune and AIM EnMAP ROICs	Andreas NEUZNER (OHB System)
10h15	4.5	Low flux NGP characterisation for MICROCARB application	Aurélien LEDOT (CNES)
10h40	break		
session 5 : SWIR detectors Chairman : Olivier SAINT PE (ADS)			
11h10	5.1	e-APD and InGaAs fast low noise infrared camera systems at First Light Imaging	Philippe FEAUTRIER (First Ligth Imaging)
11h35	5.2	A 400 KHz line rate 2048-pixel Stitched SWIR linear array	RosaMaria VINELLA (XENICS)
12h00	5.3	Radiation Damage Factor of InGaAs photodiodes	Christophe INGUIMBERT (ONERA)
12h25	lunch		
14h00	5.4	HgCdTe APDs for time resolved space applications	Johan ROTHMAN (CEA-LETI)
14h25	5.5	Time-of-flight Calibration of an MCT-APD sensor for a Flash imaging LiDAR	Victor SARAIVAPARAHYBA (CEA-LETI)
14h50	5.6	VIS/SWIR IR detectors for space applications at AIM: models and qualification status	Holger HÖHNEMANN (AIM)
15h15	5.7	New IR-detector for anthropogenic gas detection and hyperspectral applications	Josef KAMANN (AIM)
15h40	5.8	Monolithic Infrared Image Sensors based on Thin-Film Quantum Dot Photodiodes	Epimitheas GEORGITZIKIS (IMEC)
16h05	5.9	Safran Reosc coatings on Infrared detectors	el-houcine oubensaid (SAFRAN REOSC)
16h30		End of the workshop	