RADOPT 2023: Workshop on Radiation Effects on Optoelectronic Detectors and Photonics Technologies

WORKSHOP

29th and 30th, November 2023

TOULOUSE, France

ISAE-SUPAERO
10 Avenue Edouard Belin, 31400 Toulouse

Co-organised by CNES, UJM, SODERN, ISAE-SUPAERO
AIRBUS DEFENCE & SPACE, THALES ALENIA SPACE

Sponsored by RADECS

FINAL PROGRAM

After the success of RADOPT 2021, this second edition of the workshop, will continue to combine and replace two well-known events from the Photonic Devices and IC's community: the "Optical Fibers in Radiation Environments Days - FMR" and the Radiation effects on Optoelectronic Detectors Workshop, traditionally organized every-two years by the COMET OOE of CNES.

The objective of the workshop is to provide a forum for the presentation and discussion of recent developments regarding the use of optoelectronics and photonics technologies in radiation-rich environments. The workshop also offers the opportunity to highlight future prospects in the fast-moving space, high energy physics, fusion and fission research fields and to enhance exchanges and collaborations between scientists. Participation of young researchers (PhD) is especially encouraged.

WORKSHOP OFFICIAL LANGUAGE

The official language for the workshop is English.

ORAL PRESENTATIONS

The authors are requested to prepare their presentation in PDF or PowerPoint format, to be presented at the workshop. Presentations shall be limited to 15 minutes + 5 minutes for questions.

The presentations must be received before the November 26th. (clementine.durnez@cnes.fr and cedric.virmontois@cnes.fr)

Authors are also required to provide a version of their presentation to the organization committee along with an authorization to make it available for Workshop attendees and on-line for COMET members. No proceedings will be edited therefore no detailed manuscript needs to be submitted.

REGISTRATION

CNES, UJM, SODERN, ISAE-SUPAERO, RADECS, COMET, Airbus Defence & Space and Thales Alenia Space will sponsor the workshop. The event is free.

On-line registration is here available: https://site.evenium.net/radopt-2023/registration

This online registration requires several steps:

- On line Pre-registration

- You will be notified that the pre-registration is accepted and completed

SCHEDULE

Deadline for registration	**20th November 2023**
Deadline for presentation delivery	**26th November 2023**
Workshop	29th to 30th November 2023

EXHIBITION

Several booths will be available during the workshop. If you are interested, please contact the organization committee.

ORGANIZATION COMMITTEE

CNES	*Clémentine Durnez* *Nourdine Kerboub* *Cédric Virmontois*	clementine.durnez@cnes.fr nourdine.kerboub@cnes.fr cedric.virmontois@cnes.fr
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Wednesday November 29th - Program

Schedule	Ref	Title	Presenter / Chaiman	Organisation
08:30 - 09:00		*Welcome and coffee*		
09:00 - 09:15		**Introduction**		**CNES**
	Session 1	**Basic mechanisms**		
09:20 - 10:20	1-1	**Simulating displacement damage in electronic devices: from primary knock-on atom to electronic noise**	**A. Jay**	**CNRS**
10:20 - 10:40	1-2	Displacement Damage Effect assessment : a discussion about the NIEL scaling approach	C. Inguimbert	ONERA
10:40 - 11:10		*Coffee break*		
	Session 2	**Optoelectronic and photonic Devices**		
11:15 - 11:35	2-1	1 MeV electron irradiation test during the conception of new radiation resistant solar cells	A. Alessi	LSI
11:35 - 11:55	2-2	Effects of 6 MeV electron radiation on multi-colored commercial LEDs	L. Weninger	UJM
11:55 - 12:15	2-3	Test bench development to monitor optical transceivers and sub-modules under heavy ions	Arnaud Dufour	CNES
12:15 - 12:35	2-4	6 MeV Electron Radiation Effects on integrated Si and SiN ULL Waveguides	I. Reghioua	CEA-LETI
12:35 - 14:05		*Lunch*		
14:05 - 15:05		**Radiation Tests of Optoelectronic Devices and Image Sensors: Advice and Pitfalls**	**R.Marec M.Beaumel**	**TAS/SODERN**
	Session 3	**Infrared detection**		
15:10 - 15:30	3-1	Radiation Effects on MWIR HgCdTe Detectors	S. Dinand	CEA-LETI/Airbus/ISAE-SUPAERO
15:30 - 15:50	3-2	Effects of Protons irradiations on SWIR p/n low flux MCT detector at cryogenic temperature	T. Friess	CNES/CEA-LETI/ISAE-SUPAERO/Airbus
15:50 - 16:20		*Coffee break*		
16:20 - 16:40	3-3	X-ray radiation effect on colloidal quantum dot based short-wavelength infrared photodiode	S. Lee	IMEC
16:40 - 17:00	3-4	Radiation Tolerance of Low Noise Photoreceivers for Laser Interferometric Space Applications	P. Colcombet	CNRS/ONERA
17:00 - 17:20	3-5	Proton Radiation-induced Dark Current Increase in InGaAs Photodiodes	M. Benfante	III-V Lab/CNES/TAS/ISAE-SUPAERO
17:20 - 17:40	3-6	Impact of 63 MeV proton irradiation on the dark current of Ga-free T2SL XBn barrier infrared detector	C. Bataillon	IES/Airbus
17:40 - 19:35		*Cocktail*		

Thursday November 30th - Program

Schedule	Ref	Title	Presenter / Chaiman	Organisation
	Session 4	**Visible Detctors**		
08:20 - 09:20	4-1	**CMOS image sensors for science and space**	**K, Stefanov**	**Open University**
09:20 - 09:40	4-2	Radiation Hardness Assurance for Photodetectors and Image sensors: Development of Test Guidelines	A. Le Roch	ISAE-SUPAERO
09:40 - 10:00	4-3	Radiation results from CIS220 using HiRho technology on thick EPI material.	J. Pratlong	Teledyne
10:00 - 10:20	4-4	Nuscis: A NewSpace Scientific Imaging System for SmallSats	A. Holland	XCAM
10:20 - 10:50		*Coffee break*		
10:50 - 11:10	4-5	Exploring Space-Radiation Induced Dark Signal and Random-Telegraph-Signal in a Sony IMX219 CMOS Image-Sensor	A. Antonsanti	NASA/CNES/ISAE-SUPAERO
11:10 - 11:30	4-6	Total Ionizing Dose Effects on a CDTI based CCD-on-CMOS through Buildup of Interface Traps and Oxide Charges	A. Salih Alj	ISAE-SUPAERO/CNES/TAS
11:30 - 11:50	4-7	Effects of X-ray and Gamma Ray Irradiations on 2D and 3D CMOS SPADs	A. Jouni	CNES/ST/ISAE-SUPAERO
11:50 - 12:10	4-8	Neutron Irradiation Damage Analysis on Single and Dual Layer 150nm CMOS SPAD	F. Shojaei	University of Pavia
12:10 - 12:30	4-9	Proton Radiation Damage in Silicon Photomultipliers for Gamma-Ray Spectroscopy	A. Panglosse	CNES
12:30 - 14:00		*Lunch*		
14:00 - 14:20	4-10	Radiation resistant Hi-QE MCP-PMT detectors for space applications	D. Orlov	Exosens
14:20 - 14:40	4-11	Image sensor with stacked perovskite absorber for X-ray, visible and near-infrared imaging	P-F. Ruedi	CSEM
	Session 5	**Optical Fibers**		
14:45 - 15:05	5-1	Overview of the Infrared Radiation Responses of Telecom-grade Single Mode Optical Fibers	Alexis Dufour	UJM
15:05 - 15:25	5-2	Spatially Distributed Radiation Detection based on a Radiosensitive Ultra-Low Loss Optical Fiber	L. Weninger	UJM
15:25 - 15:45	5-3	Regeneration of Phosphosilicate Optical Fiber Dosimeters operating in the Visible Domain	M. Roche	UJM/CNES/Exail
15:45 - 16:05	5-4	Recent studies on Radio PhotoLuminescent (RPL) dosimeters	M. Ferrari	UJM
16:05 - 16:25	5-5	Solar Particle Event Detection with the LUMINA Optical Fiber Dosimeter aboard the International Space Station	M. Roche	UJM/CNES/Exail
16:25		End of Workshop		