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FEB

**Electronics Testing
with High Energy Ions
at the NASA Space
Radiation Laboratory**

BY DR. MICHAEL SIVERTZ

 Thursday 15 February 2.30 - 3.30 PM (Geneva time) Online via Zoom

REGISTER VIA

indico.cern.ch/e/nsrl

RADNEXT Facility Webinar

Ygor Aguiar, Project Management Officer

Intro to “**Electronics Testing with High Energy Ions at the NASA Space Radiation Laboratory**” by Dr. Michael Sivertz, Feb. 2024

The logo for RADNEXT features the word 'RAD' in a blue, sans-serif font above the word 'NEXT' in a darker blue, sans-serif font. A stylized blue and white icon of a particle detector or ion beam component is positioned between the 'A' and 'D' of 'NEXT'.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No **101008126**

RADNEXT Facility Webinar Series

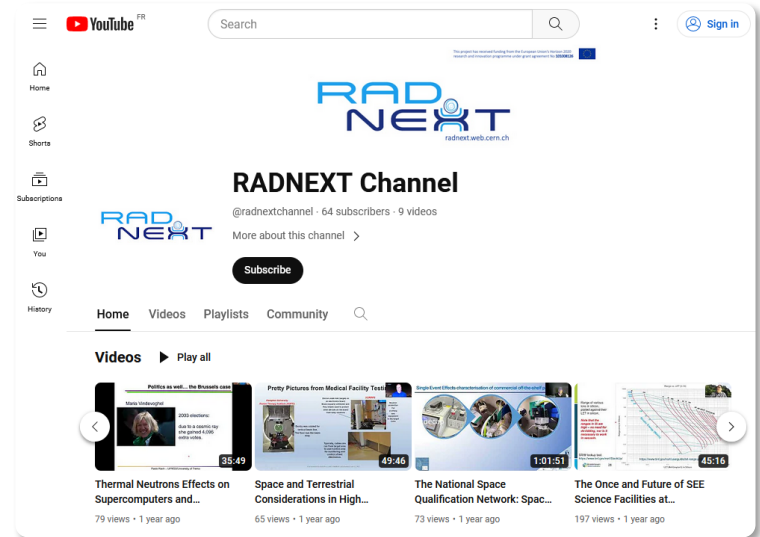
The present and future of radiation facilities worldwide

- ✓ **A Guide to Japan for SEE Travelers**, Dec. 2022.
- ✓ **Thermal neutron effects in electronic components**, Sept. 2022.
- ✓ **US Proton SEE facilities**, Jun. 2022.
- ✓ **Space Qualification facilities in Australia**, April 2022.
- ✓ **The Once and Future of SEE Science Facilities at BNL**, Feb. 2022.

TODAY

“Electronics Testing with High Energy Ions at the NASA Space Radiation Laboratory” by Dr. Michael Sivertz, NSRL

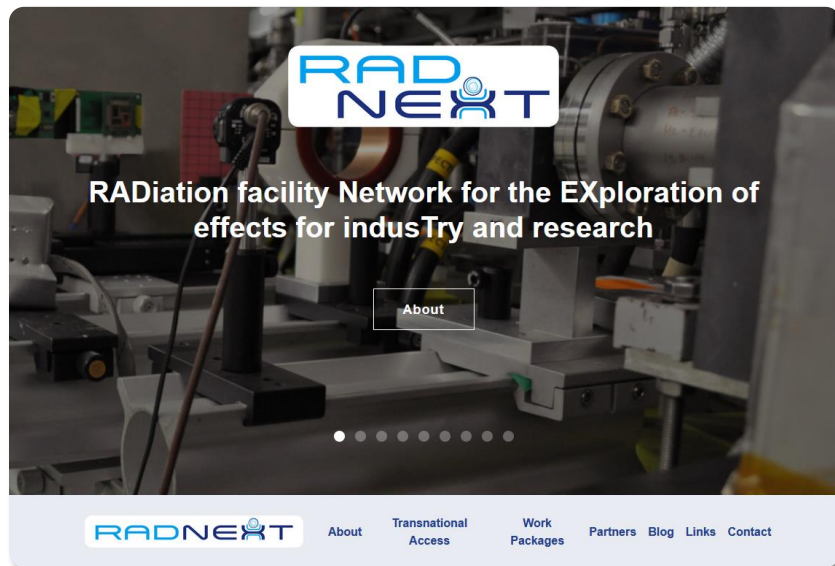
Dr. Sivertz earned a PhD. in experimental particle physics from Stony Brook University in 1983. After collaborating with experiments at CERN, SLAC, FERMILAB, CESR, and RHIC, Dr. Sivertz joined the team at the NASA Space Radiation Lab (NSRL) in 2005. He became the Principal Investigator of NSRL in 2022.



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Website



Work Packages

WP01.MGT		Project management	
Networking Activities			
WP02.NA1	Communication, dissemination, exploitation and training	Joint Research Activities	
WP03.NA2	Transnational access management and harmonization	WP05.JRA1	Radiation monitors, dosimeters and beam characterization
WP04.NA3	Roadmap and pre-design of future irradiation facilities	WP06.JRA2	Standardization of system level radiation qualification methodology
		WP07.JRA3	Cumulative radiation effects on electronics
		WP08.JRA4	Complementary modelling tools
		Transnational Access	
		WP09.TA1	Neutron, muon and mixed-field spallation facilities and irradiation
		WP10.TA2	Proton, heavy ion and alternative beams and irradiation


Blog



G-RADNEXT Workshop in November 2023

Invitation to G-RADNEXT Workshop 2023, the Workshop for Industry on Radiation Hardness Testing of Semiconductor Devices and JET/FA4 at the RAJELLE FACILITIES.


[Read more](#) [Event](#)



RADNEXT Annual Meeting at CNA in May 2023

The 2nd RADNEXT Annual Meeting will take place on 9-10 May 2023 in Seville, Spain, co-organized by CERN and CNA.

[Read more](#) [Event](#)



SERESSA 2022

The 19th edition of the International School on the Effects of Radiation on Embedded Systems for Space Applications (SERESSA) took place at CERN in December 2022.

[Read more](#) [Event](#)



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RADIation facility Network for the EXploration of effects for indusTry and research
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Overview

RADNEXT is an EU funded project with the main objective of creating a network of facilities and related irradiation methodology for responding to the emerging needs of electronics component and system irradiation for new space, automotive,

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Is there a better way of starting off the new year than with a **RADNEXT** call for #EU funded beam time in one of our facilities? The call is open until January 31st, and beam is expected to be available in the 16 facilities below, including #heavyions, #protons and #neutrons.

The call is open to radiation effects testing users worldwide, from all sectors, including also #industry.

<https://lnkd.in/gFUTSPM>

Institute / Organisation	Facility	Country	Beam type	19 th TA call (Jan 2024)	Comment
PTB	PIAF	Germany	Mono-energetic neutron	Available	Neutron
ENEA	FNG	Italy	Mono-energetic neutron	Available	
UKRI-STFC	EMMA	United Kingdom	Thermal neutron	Available	
ILL	TENIS	France	Thermal neutron	Available	
HZDR	eELBE	Germany	White neutron spectrum	Available	Proton
HZDR	DRACO	Germany	Laser pulsed proton spectrum	Available	
CNA	Tandem/Cyclotron	Spain	Mono-energetic < 20 MeV	Available	
PSI	PIF	Switzerland	Mono-energetic 10-230 MeV	Available	Heavy ion
TRIUMF	BL1B	Canada	Mono-energetic 300-500 MeV	Available	
UCL	HIF	Belgium	Cocktail energy 9.3 MeV/n	Available	Alternative
GANIL	GANIL	France	Xe 10-50 MeV/n	Available	
GSI	SIS-18	Germany	U 100-800 MeV/n	Limited	June only
CERN	CHARM	Switzerland	Mixed-Field	Available	Alternative
HZDR	eELBE	Germany	Pulsed electron spectrum	Available	
HZDR	gELBE	Germany	Pulsed gamma spectrum	Available	
ESRF	ESRF	France	Pulsed X-rays	Available	

You and 62 others

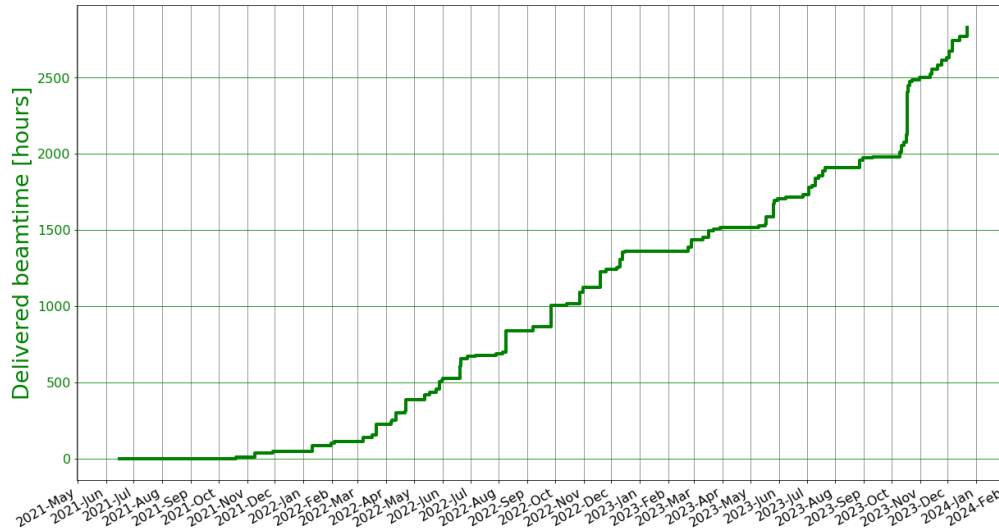
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Transnational access to irradiation facilities

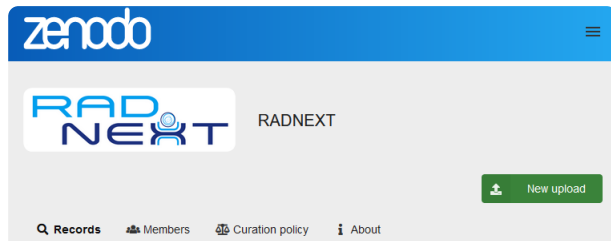
- ✓ RADNEXT project focuses on transnational access to irradiation facilities.
- ✓ Over 6000 beam time hours available across 20+ facilities in Europe and beyond.
- ✓ Academic and industrial groups, especially SMEs, eligible for beam time
- ✓ Beam time awarded to RADNEXT users is **free**, funded by EU's Horizon 2020 program.



Next Call For Proposals opens
in May 2024.



Zenodo: RADNEXT reports and preprints



68 results found

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July 15, 2022 (v1) Preprint Open

Fragmented high-energy heavy ion beams for electronics testing

García Alla, Rubén; Bilko, Kacper; Cerutti, Francesco; and 10 others

Fragmented heavy ion beams obtained from the interaction of highly energetic ions with thick targets relative to the ion ranges are proposed to mimic the high-penetration LET spectrum present in space and for electronics testing. Our experimental data characterizing fragmented heavy ion beams shows an excellent level of agreement with the Monte ...

Uploaded on July 15, 2022

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August 5, 2022 (v2) Report Open

TA02-01: SEE test of GaN HEMT power devices under dynamic biasing conditions

Sauveplane, J. B.

RADNEXT Transnational Access Summary Report

Uploaded on November 3, 2022

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1 more versions exist for this record

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EDRS NO. 2792595
DOI: 1.0
VALIDITY Released

DOI: 10.5281/zenodo.7285083

RADNEXT Transnational Access Summary Report

Project title	Ground SEE testing of LEON3/NOEL-V demonstrator chip in European deep-submicron technology
Project TA identifier Example: TA1-11 (1 st TA call, experiment 11)	TA02_15
General application (e.g. space, high-reliability ground level, avionic, high-energy accelerators and others)	Space
Type of test (e.g. SEE, TID, TMD, radiation monitor calibration and others)	SEE
Group leader, Institute	Lucas Antunes Tambara, Cobham Gaister AB
Date(s) of the experiment	29 and 30 of July, 2022
Facility	PIF/PSI, Switzerland
Amount of access granted (unit of access: 1h)	12h

Objectives of the experiments

Cobham Gaister AB takes part in the ESA's GOMX-5 mission with the Advanced Payload Processors (APPs) In-Orbit Demonstration (IOD) experiment. The APPs include an ASIC test chip that implements the recently released LEON3 and NOEL-V fault-tolerant (FT) processor IP cores. The ASIC test chip implements a System-on-Chip (SoC) containing one RV04 NOEL-V core and one 32-bit LEON3 core, 128 KB on-chip RAM (FTAHBRAM), SoC bridge, GPIOs, and JTAG and UART interfaces. The ASIC test chip is made on European technology, the STMicroelectronics 28nm FDSOI GEO P2, and its development is a collaboration between STMicroelectronics and Cobham Gaister R&D teams.

The ASIC test chip was previously characterized with heavy ion testing for both SEL and SEUs. However, the SEUs in the ESA's GOMX-5 mission are expected to be dominated by protons. Therefore, this work aimed at the ground-level proton-induced SEE testing of the ASIC test chip. The results collected during the test campaign are expected to be compared later with in-flight results from the APPs IOD experiment.

<https://radnext.web.cern.ch/>

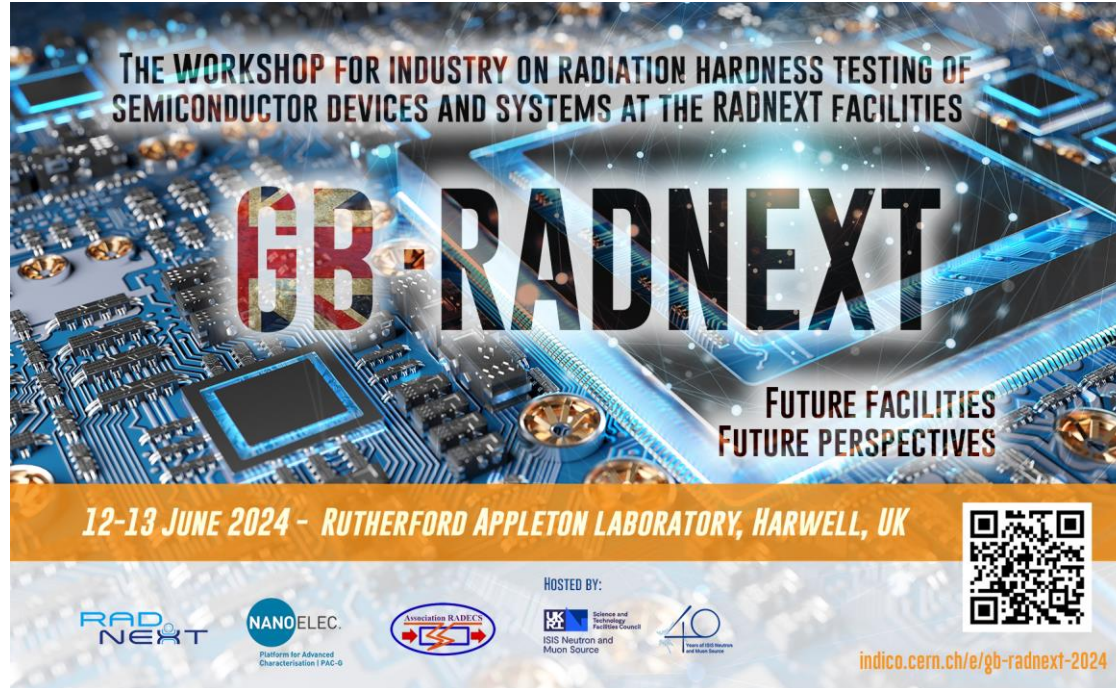
<https://www.linkedin.com/company/radnext>

EDRS 2792595 v.1.0 status: In Work access: Restricted
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<https://zenodo.org/communities/radnext>

GB-RADNEXT








THE WORKSHOP FOR INDUSTRY ON RADIATION HARDNESS TESTING OF SEMICONDUCTOR DEVICES AND SYSTEMS AT THE RADNEXT FACILITIES

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FUTURE FACILITIES
FUTURE PERSPECTIVES

12-13 JUNE 2024 - RUTHERFORD APPLETON LABORATORY, HARWELL, UK

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Thanks for your attention!



Image Source: CERN



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