# ILL

Manon Letiche
RADNEXT 1st Annual Meeting – 8-9 June 2022
https://indico.cern.ch/e/radnext-2022

# 1. Completed TA campaigns

N/A

# 2. Scheduled TA campaigns

N/A

# 3. Accepted and assigned TA campaigns, to be scheduled

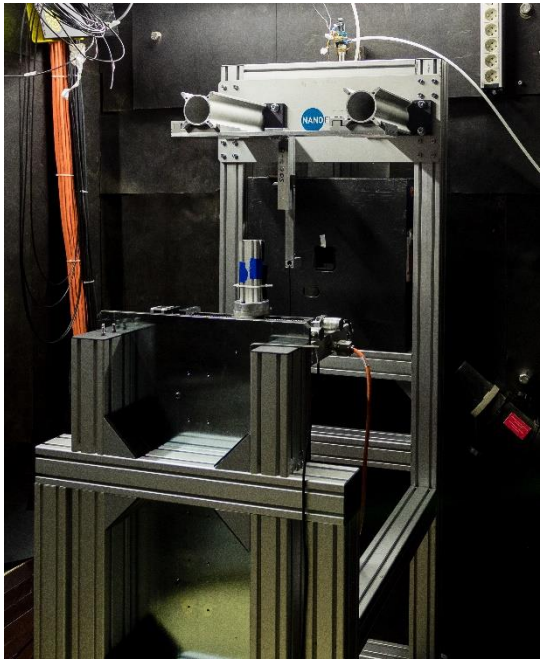
N/A

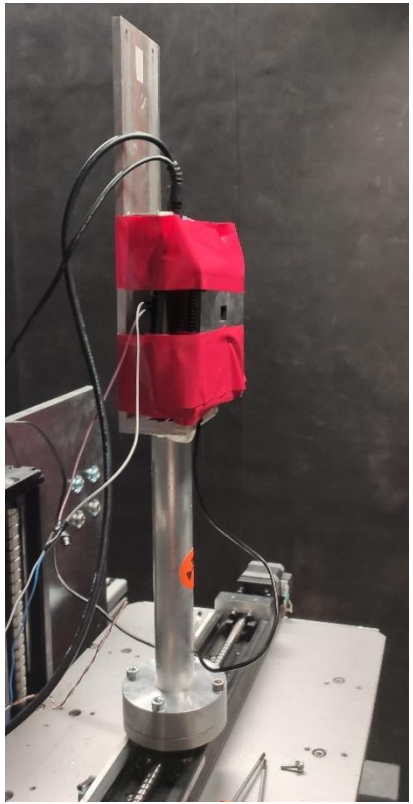
# TENIS: Thermal and Epi-thermal Neutron Irradiation Station

- **Beam characteristics**
  - Beam with a fission spectrum: large component of thermal neutrons
  - Flux $_{\text{thermal-equivalent}}$: 2,4 $n.cm^{-2}.s^{-1}$ estimated by Au foils activation at the sample position for a reactor power of 55MW
  - Adjustable beam size from 1x1 $mm^2$ to 50 x 50 $mm^2$

- A calculated flux of gamma coming from the reactor, **compatible with TID test**
  - $\Phi\gamma = 7.5x10^8$ $\gamma/cm^2/s$
  - Dose Rate = 18 Gy/h (1,8 KRad/h)
  - Maximum dose rate reachable using Cd: 115 Gy/h (11,5 kRad/h)

*@P. Jayet CEA LETI*





*TIMA set-up*

# 4. TA time already awarded VS Total facility TA quota

- ILL HFR reactor shutdown: October 2021 – “January” 2023

- Very few proposals for thermal neutrons have been received
  - Is it due to our large communication about the shutdown?
  - Is it due to a lack of communication about thermal neutrons applications?

- 100h through TA at TENIS facility to be granted during RADNEXT project

# Ground floor and avionic applications

Effects of thermal neutron radiation on a hardware-implemented machine learning algorithm

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ARTICLE INFO

*Keywords:*
Radiation effects

ABSTRACT

Hardware-implemented ma
critical applications. This

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Thermal Neutron-Induced SEUs in the LHC Accelerator Environment

Matteo Cecchetto, *Student Member, IEEE*, Rubén García Alía, *Member, IEEE*, Frédéric Wrobel, *Member, IEEE*, Maris Tali, *Member, IEEE*, Oliver Stein, Giuseppe Lerner, Kacper Bilko, Luigi Esposito, Cr
Matteo Brucoli, *Associate*

Neutron-induced effects on a self-refresh DRAM☆

Lucas Matana Luza [a,*], Daniel Söderström [b], Helmut Puchner [c], Rubén García Alía [d], Manon Letiche [e], Carlo Cazzaniga [f], Alberto Bosio [g], Luigi Dilillo [a]

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ARTICLE INFO

*Keywords:*
Neutron
Radiation
Self-refresh
DRAM
SEE
Stuck bits

ABSTRACT

The field of radiation effects in electronics research includes unknowns f
technical development. In this study, static and dynamic test methods were
refresh DRAM under neutron irradiation. The neutron-induced effects we
event cross sections, soft-error rate, and bitmaps evaluations, leading to
temporary stuck cells, single-bit upsets, and block errors. Block errors were
dependency in the addressing order, leading to up to two thousand faulty

Contribution of Thermal Neutrons to Soft Error Rate

Cécile Weulersse, Sabrine Houssany, Nicolas Guibbaud, Jaime Segura-Ruiz, Jérôme Beaucour,

*Abstract*— Boron-
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High Energy and Thermal Neutrons Sensitivity of Google Tensor Processing Units

Rubens Luiz Rech Junior*, Sujit Malde†, Carlo Cazzaniga†, Maria Kastriotou†, Manon Letiche‡, Christopher Frost†, and Paolo Rech*§
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Effects of Thermal Neutron Irradiation on a Self-Refresh DRAM

Lucas Matana Luza[1], Daniel Söderström[2], Helmut Puchner[3], Rubén García Alía[4], Manon Letiche[5], Alberto Bosio[6] and Luigi Dilillo[1]

# 5. Approach for user (financial) support

N/A

# 6. Overall feedback about TA workflow

This 6th point can be covered in 1 slide.

# Thanks for your attention!

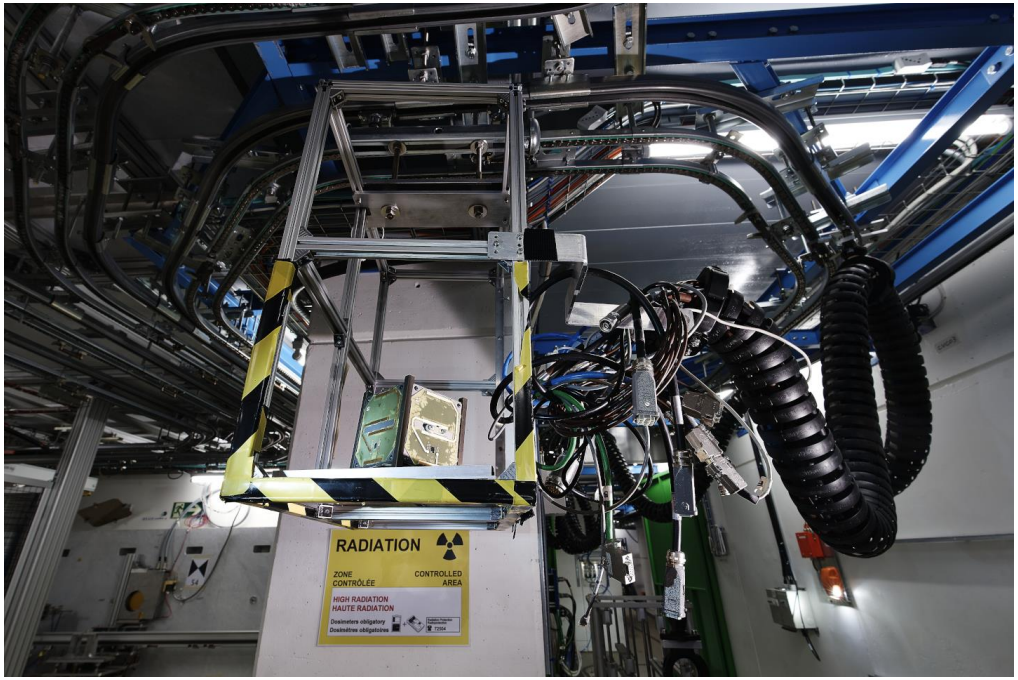


*Image Source: CERN*