RADSAGA

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie-Sklodowska-Curie grant agreement number 721624.

ESR 15

Andrea Coronetti

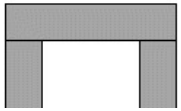
Prospective activities for year 2018

RADSAGA Training Workshop – March 2018

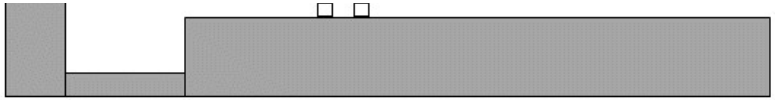
CHARM

Cern High-Energy AcceleRated Mixed-field facility

- Mixed field:
  - Pions
  - Protons
  - Neutrons
- Energy spectra (meV-GeV)
- Not in guidelines!
  - But in the current RHA at CERN



Class	Mixed-Field	Proton (PSI)	Heavy-ion
Class-0 (potentially sensitive)	**Mandatory** Component tests or tests of the complete board for SEE and TID	N/A	N/A
Class-1 (potentially critical	**Optional** Component tests or tests of the complete board for SEE and TID	**Mandatory** Component tests for SEE and TID (margin to account for >1GeV)	N/A
Class-2 (highly critical)	**Optional** Component tests or tests of the complete board for SEE and TID	**Mandatory** Component tests for SEE and TID (margin to account for >1GeV)	**Mandatory** Component tests for better SEL assessment

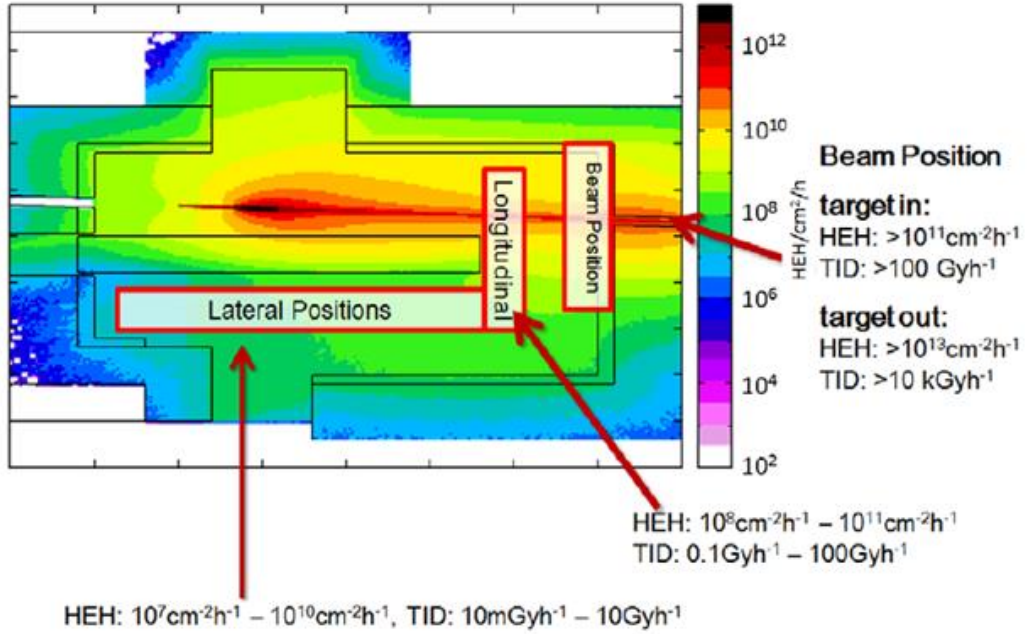


RADSAGA

CHARM

Cern High Energy AcceleRated Mixed-field facility

- No radiation-free haven:
  - Care about what you put in irradiation areas
- 1 full week irradiation
  - CHARM week wed to wed
  - Target and shielding can be changed
- Typical TID 100-400 Gy
- Dry-Run
  - Need to come one week before
- Post Irradiation Tests
  - No immediate measurements
  - Shorter annealing time if components separable from boards



RADSAGA

CHARM

RADSAGA campaign coordination

- Constraints
  - CHARM available till October 2018
  - Scaling of equipment
  - Timing incompatibilities
  - Further upgrading of systems
  - Setup not well known
  - Availability of supporting components
  - Incompatibility with existing CHARM HW
  - Measurements at other facilities are valuable
  - Special requests
  - Skype illegal in France
  - …
- Applications
  - Only 7 ESRs will test
  - 2 RADSAGA partners to test
  - No RADSAGA week
  - Need to come multiple times (ESR12 – ESR14)
  - Need further iteration with the facility
  - Better to bring your own
  - Optical fibers (ESR2)
  - Determine best position (ESR4)
  - Water cooling (ESR14)
  - Infringe the law or Vidyo
  - …

RADSAGA

CNES Secondment

- Standards for Space Radiation Testing
  - Interpretation and application from a space agency POV
- Testing of COTS devices at UCL
- Integration of NINANO with 3DPlus camera
  - Preparation for testing at CHARM
- Preparation for testing of Xilinx UltraScale+ FPGA

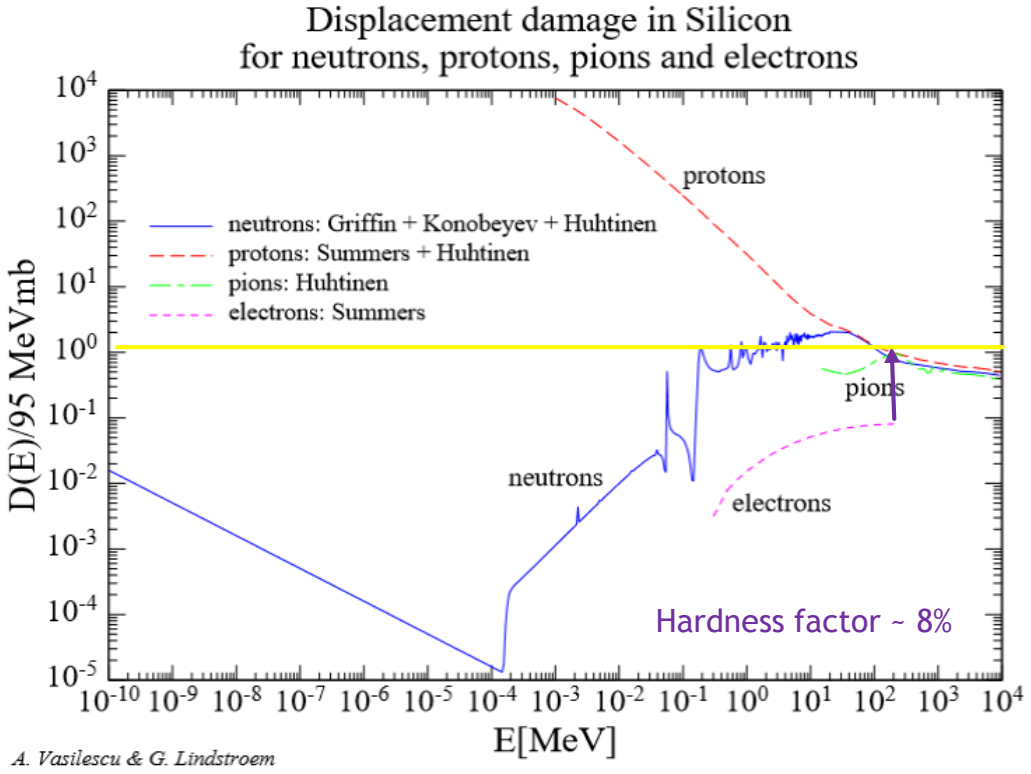
CENTRE NATIONAL D'ÉTUDES SPATIALES

RADSAGA partner

Displacement Damage

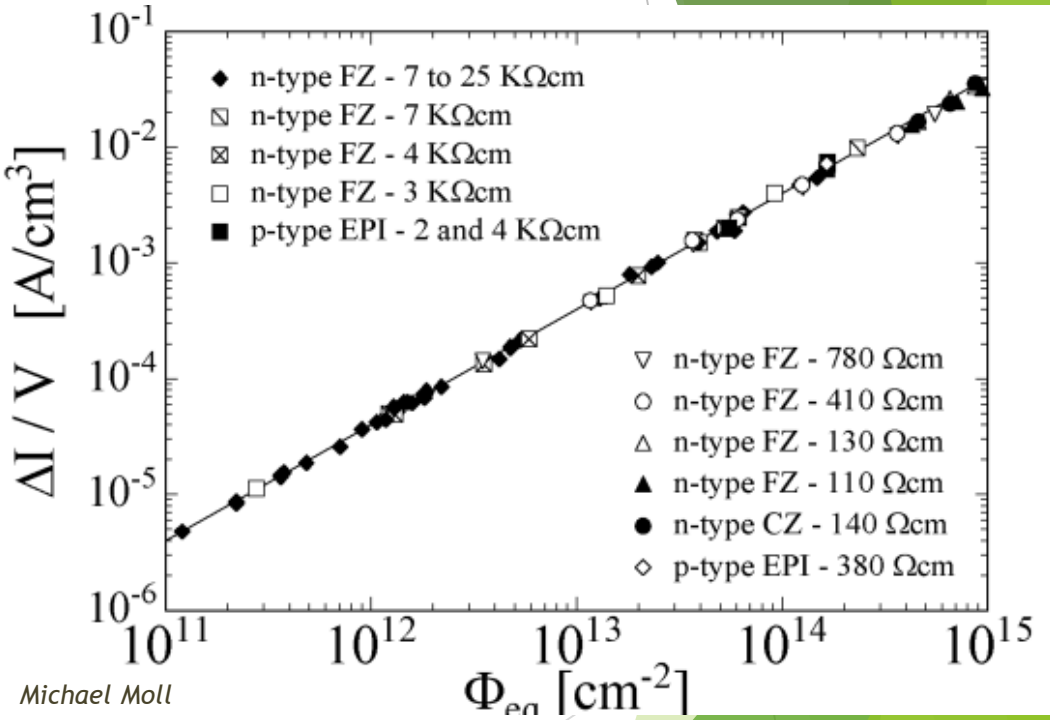
- VESPER
  - New use of the facility at CERN
- 60-200 MeV electron beam
- Two beam modes
  - Dark current
  - Laser driven

VESPER = Very energetic Electron facility for Space Planetary Exploration missions in harsh Radiative environments



Displacement Damage

- PIN Diodes
  - Multiple fluence steps
- Objectives
  - Calibrate facility for two modes of use
  - Find an alternative to DD Neutron testing



Michael Moll

RADSAGA

GANIL

- Heavy ions with higher energy than UCL, RADEF
- Planning as of today
  - Lead beam 29 MeV/n
  - July 3rd-5th
- ESR1, ESR4, ESR7, ESR15

RADSAGA

ESR 15

Andrea Coronetti

Prospective activities for year 2018

RADSAGA Training Workshop – March 2018

RADSAGA