

CNA – Low Energy Proton Capabilities

Yolanda Morilla

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<https://indico.cern.ch/e/radnext-2022>



1. Completed TA campaigns

This 1st point can be covered in 1 slide per completed test.



2. Scheduled TA campaigns

This 2nd point can be covered in 1 slide that gathers all the scheduled tests.



3. Accepted and assigned TA campaigns, to be scheduled

This 3rd point can be covered in 1 slide that gathers all accepted tests for which the date has still to be defined.

For facilities having provided a significantly larger TA amount than foreseen for the first part of the project, would you be willing to increase your offer at the same unit cost as originally defined, in case it could be funded by the project?



4. TA time already awarded VS Total facility TA quota

Current RADNEXT status: 4 TA calls out of 13

There was not TA demand at CNA in one year. Could be covered the TA provision in ~2 years?

WP 10 – TA2 provision per installation

Min. quantity of access to be provided: 200 h – 20 days – 4 weeks (8 users – 4 projects)

Access costs: 20000 €

Could we wait for one more year or is it better to transfer the funding to another facility?

Could the TA access be much more exploited by the groups working on another WP (e.g. radiation monitors)?

Any suggestion?

We know that the use of low energy proton beam is much less interesting for generic applications on electronic. However, during 2022 the facility has been used out of RADNEXT-TA for testing of SRAMs, particle sensors as diodes, MOSFETs, TimePIX (by Spanish Universities and CERN); solar cells, cables or another materials (mainly by companies as TRAD, AIRBUS, CESI...)

5. Approach for user (financial) support

The CNA-USE best option: the facility contact organizes the travel with the user taking into account the limitations from the local financial manager (FIUS)

- 9000 € are available
- For the displacements it is necessary to present invoices or tickets, whenever possible in the name of FIUS
- Travel in private vehicles is not covered
- The accommodation is justified by means of an invoice in the name of FIUS
- A specific travelling agency works with FIUS
- For diets you must present food tickets or invoices

6. Overall feedback about TA workflow

The current TA workflow looks reasonable

Experience as user: **the process was faster than expected!**

Approval into 39 days

+ 2 days, the facility contacts and offers date into 2 months

The campaign has been delayed due to our own availability

We support the Agreement on cancellation policy

Maybe, a mandatory step could be included as «confirmation-compromise from user»

Public joint center (US/CSIC/JA) placed in Sevilla (Spain)

Spanish ICTS (singular scientific and technological infrastructure)
Interdisciplinary research

RADNEXT beneficiary – Universidad de Sevilla

RADNEXT involvement – Low energy proton facilities

3 MV Tandem Pelletron (NEC):

- $^1\text{H}^+$ ~600 keV to 6 MeV (FWHM 0.2 - 0.03 %)
- Energy steps in tens of keV available Flux range: $\sim 10^3$ to $\sim 10^{12}$ p/cm²s
- H [LET(Si) ~0.2 - 0.05 MeV-cm²/mg / Range ~7-300 microns]
- Spot beam size (usually focused on 1cm²)
- Maximum uniform irradiated área (scanning systems): 16x20 cm²
- Vacuum system (P ~ 10⁻⁶ mbar)
- Manual tilt available
- Several opto-electrical feedthroughs

RADNEXT – WP10-TA2

Availability for transnational access:
200 hours

Monday to Friday, maximum 10 hours/day

Scientists-in-charge:

Yolanda Morilla & Pedro Martín-Holgado

Compact 18/9 Cyclotron (IBA):

- $^1\text{H}^+$ 18 MeV (FWHM 1 – 3 %); $^1\text{H}^+$ 16 - 10 MeV (by using degraders)
- H [LET(Si) ~0.02 - 0.04 MeV-cm²/mg / Range ~700-2000 microns]
- External beam line. (Possibility to couple vacuum chamber)
- Maximum achievable uniform irradiated area at 10 MeV (Ø 3.5 cm)

Others available beams:

- LE Heavy ions and neutrons
- Co-60 Gamma irradiation system (RadLab)

Thanks for your attention!



Image Source: CNA