

Transnational Access - WP10 Proton, heavy ion and alternative beams and irradiation

Françoise Bezerra (francoise.bezerra@cnes.fr)

Arto Javanainen (arto.javanainen@jyu.fi)

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



Outline

- Part 1: Françoise BEZERRA
 - TA2 WP10 introduction
 - Protons
 - Alternative Facilities

- **Part 2: Arto JAVANAINEN**
 - **Heavy ions**
 - **Conclusion and comments**

Heavy ions

	Requested h (accepted proposals)	Assigned	Used	Scheduled	To be scheduled
TA01	126 (5)	88	60	0	20
TA02	120 (9*)	108	32	0	64
TA03	90 (4*)	48	24	0	16
TA04	180 (6)	104	0	12	92
Total	516 (24*)	348	116	12	192

*: 2 proposals were cancelled by the user after being accepted.

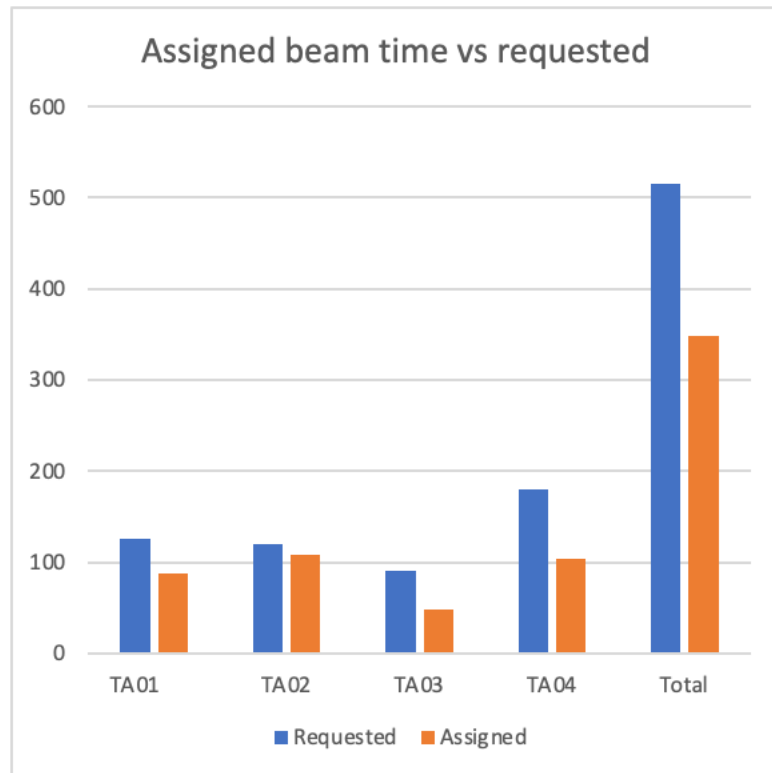
- Some users have not used the total amounts assigned

→ Assigned != (Used + Scheduled + TBS)

Heavy ions: Statistics (1/4)

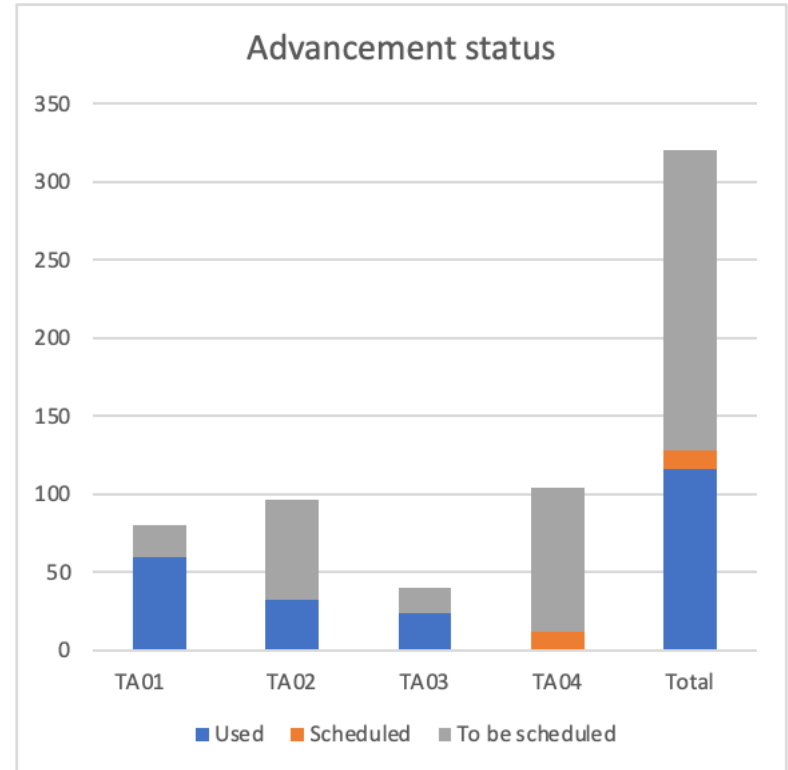
	Requested	Assigned	rate %
TA01	126	88	70 %
TA02	120	108	90 %
TA03	90	48	53 %
TA04	180	104	58 %
Total	516	348	67 %

~ 2 / 3 requested hours are approved
from ~ 51% proposals accepted



Heavy ions : Statistics (2/4)

	Used	Scheduled	To be scheduled
TA01	60	0	20
TA02	32	0	64
TA03	24	0	16
TA04	0	12	92
Total	116	12	192



Heavy ions : Statistics (3/4)

For used hours delay between submission and beam use: ~ 7 months

	Used	Delay (days)	Average/facility (days)
GSI/SIS-18	16	85	85
GSI/UNILAC	16	300	300
RADEF	12	255	198
	8	140	
UMCG	12	275	275
UCL	16	195	198
	16	240	
	12	240	
	8	115	
Average	13	205	

Heavy ions – Statistics (4/4)

Beam time already assigned vs facility

Facility - Hours	TA available (h)	TA assigned (h)	TA delivered (h)	% assigned/available
CHIMERA	500	0	0	0 %
GANIL	158	24	0	15 %
GSI/SIS18	64	16	16	25 %
GSI/UNILAC	128	52	16	41 %
RADEF	150*	56	20	37 %
UMCG	238*	40	12	17 %
UCL	240	128	52	53 %

Some facilities assigned over 31% so far (*w.r.t.4 /13 CFPs*)

* HI/P → 50%-50% from total hours provided for the project

Heavy ions – Summary Reports for Completed Tests

TA01_01: SEE, Heavy Ions Sensitivity of SiC Schottky Diodes (**REPORT AVAILABLE**)

- J. Moreno, Alter Technology
- 16 h of heavy ions at UCL on Feb 4th, 2022

TA01_02: Reliability of autonomous vehicles for deep space exploration (**PENDING**)

- P. Rech, Univ. Trento
- 24 hours at UMCG on April 24th 2022

TA01_09: Heavy-ion Experiments on 3D NAND Flash Memories with Replacement Gate Technology for Particle Detection (**PENDING**)

- M. Bagatin, Univ. Padova
- 16 hours at UCL on March 17th 2022

TA01_27: Analysis of Radiation Effects in Flash Memories Based on 3D technologies (**PENDING**)

- J. Guillermin, TRAD
- 24 hours at GSI/UNILAC on May 29th 2022

Heavy ions – Summary Reports for Completed Tests

TA02_01: SEE test of GaN HEMT power devices under dynamic biasing conditions
(**PENDING**)

- J. Sauveplane, CNES
- 12 hours at UCL on June 1st 2022

TA02_04: Cross-validation of SEREEL2 with heavy ions (**PENDING**)

- R. Sharp, Radtest
- 16 hours at UCL on 31.01. & 18.6.2022

TA02_16: Heavy ions SEE testing of Cobham Gaisler NOEL-V with RTG4 FPGA
(**PENDING**)

- F. Sturesson, Cobham Gaisler
- 12 hours at RADEF on May 18th 2022

Heavy ions – Summary Reports for Completed Tests

TA03_03: Integrated sensor interface for harsh radiation (**PENDING**)

- P. Leroux, KU Leuven
- 8 hours at RADEF on May 31st 2022

TA03_11: High energy ion beam benchmarks for dosimetry and radiation effects (**AVAILABLE**)

- Andrea Coronetti, CERN
- 16 h of heavy ions at GSI/SIS-18 on April 6-7, 2022

Conclusions (1/2)

- The number of proposals seem to be in rise (21 – 19 – 8 – 33)
 - Heavy ions in more demand than protons (or alternative beams)

Heavy-ions	Protons	Alternative beams
>788 hours (47 proposals)	205-327 (27)	>212 (7)

- Average time between proposal and test execution
 - Protons: ~6 months
 - Heavy ions: ~7 months
 - Alternative beams: ~100 days, (NOTE: only one test completed so far, and not many proposals overall)
- Some facilities are “overbooked”, i.e. more beam assignments than their “relative quota” at this point.
 - How to deal with this in long run? Reallocation of funds?
- Recent availability issues with some facilities (equipment malfunctions and/or maintenance)
 - Should be carefully considered in the beam assignment

Conclusions (2/2)

- Plenty of user summary reports still missing
 - 9 completed tests, 5 reports (2 HI + 3 P)
 - Some are quite recent tests
- Several proposals from same spokesperson/companies/groups
 - E.g. One user has submitted 8 proposals, 5 of which in TA02 (not all accepted)
 - Any limitations?
- Suggestions:
 - Would it be possible to change the CFP frequency from 4 times a year to 3 times a year? (extra month for the evaluation/assignment process)
 - Summary reports in cernbox should be renamed for easier follow-up
- **Big thanks to Andrea CORONETTI for his help, and great to have him as a WP10 deputy leader**

Thanks for your attention!

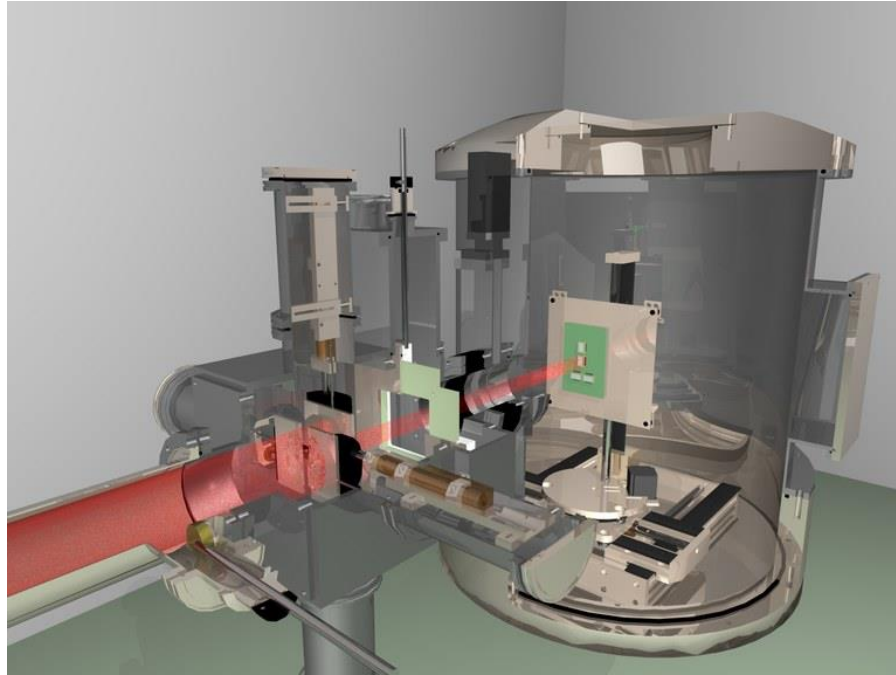


Image Source: Heikki Kettunen