

LINAC & BTF

L. Foggetta on the behalf of

LINAC/BTF Group

Researchers (5):

*B. Buonomo, F. Cardelli,
D. Di Giovenale, C. Di Giulio,
L. G. Foggetta*

Technicians (7):

*R. Ceccarelli, A. Cecchinelli,
M. Ceccarelli, G. Piermarini,
A.L. Rossi, S. Strabioli, R. Zarlenga*
Retired: *M. Belli, R. Clementi*

BRIEF ACTIVITIES SUMMARY

What we got from last SciCom (Autumn 2021 – Spring 2022) – Internal activities

COVID-19 pandemic emergency state	LINAC for SIDDHARTA Run	up to 22 Dec 2021
	Detected problem on BTFEH2 roof thickness (BTFEH2 shutdown)	end of Nov 2021
	Study solution for BTFEH2 roof, procurement	Dec 2021 -> Jan 2022
	Rescheduled users on BTFEH1	Nov 2021 -> 24 Jan 2022
	ERAD run 2	25 Jan 2022 -> 6 Feb
	LINAC preparation for KLYA replacement (BTF-DAFNE shutdown)	7 Feb -> 15 Feb
	LINAC KLYA-KLYC conditioning start	16 Feb
	BTFEH2 Re routing of air ducts	9 Feb – 11 Feb
	BTFEH2 Roof Improvement	16 Feb – 1 Mar
	LINAC KLYA-KLYC conditioning end	1 Apr
	BTFEH2 setup&beam for commissioning	2 Apr -> 11 Apr
	DAFNE startup	07 Apr
	BTFEH2 final commissioning phase	12 Apr -> 19 Apr




DUMMY CALENDAR

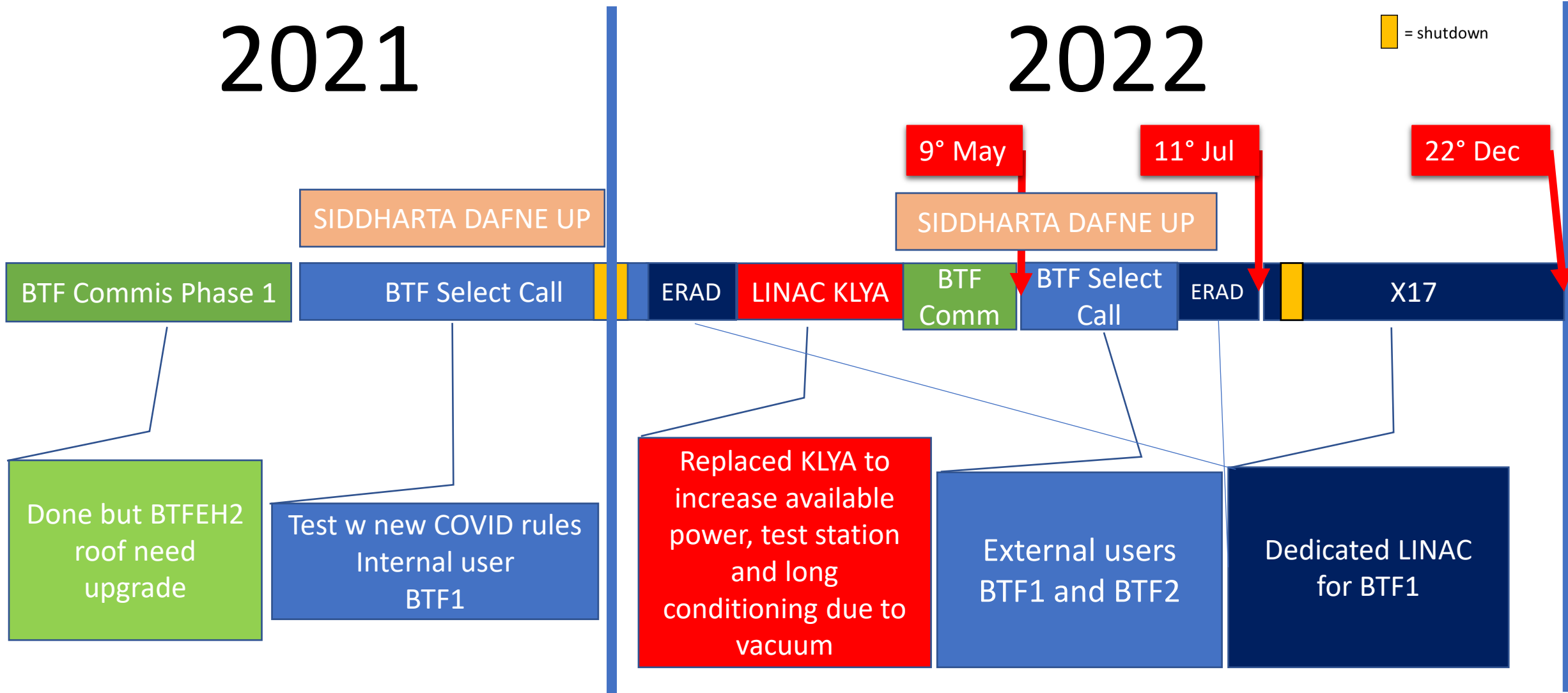
Recommendations DAFNE-BTF SC62

Establish an operational schedule for the operation of the DAFNE complex in 2022 (considering the concurrent operation of BTF1 for PADME) based on the present operational performance.

2021

2022

 = shutdown




ACTIVITIES GANTT

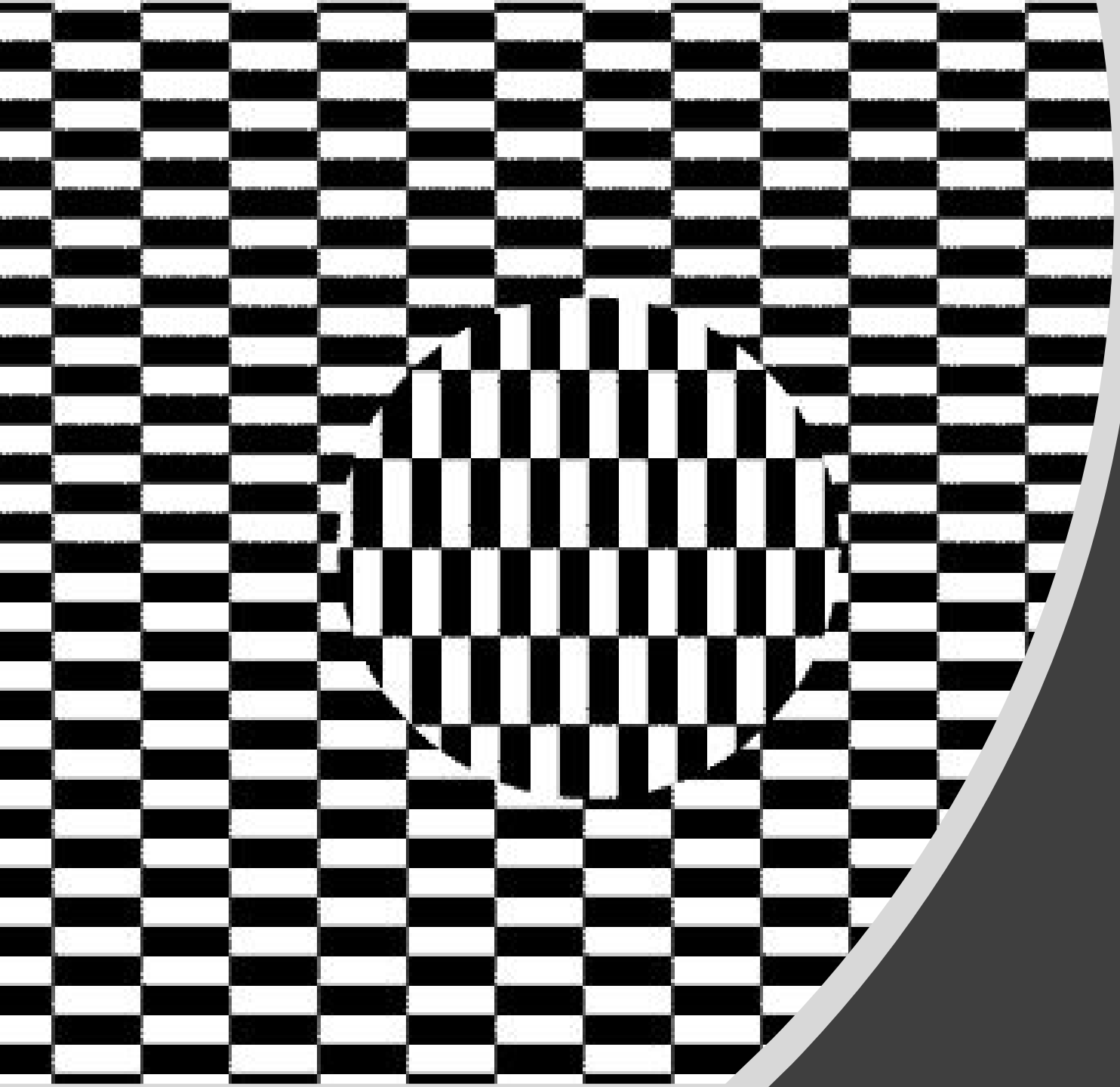
From BTF project office:
First Users Call scheduled start on Autumn 2022
Activities foreseen on Winter/Spring 2023

SCHEDULE LINAC+BTF+DAFNE 2022

2 mag - 23 dic

Griglia [Bacheca](#) [Sequenza temporale](#)

	Nome ▾	Durata ▾	Inizio ▾	Fine ▾	Dipende da ▾	Dipendenti (dop... ▾
1	<input type="radio"/> DAFNE ON - FASE GLOBALE	61 giorni	2/5/2022	25/7/2022		9
2	<input type="radio"/> SIDDHARTA	46 giorni	2/5/2022	4/7/2022		3
3	<input type="radio"/> SIDDHARTA Buffer	15 giorni	5/7/2022	25/7/2022	2	
4	<input type="radio"/> BTF extern user call	41 giorni	2/5/2022	27/6/2022		5
5	<input type="radio"/> BTF-SPARC run	5 giorni	28/6/2022	4/7/2022	4	6
6	<input type="radio"/> ERAD in spare pulse	5 giorni	5/7/2022	11/7/2022 	5	7 8
7	<input type="radio"/> BTF+X17 vacuum reconnection	1 giorno	12/7/2022	12/7/2022	6	
8	<input type="radio"/> X17 setup	10 giorni	12/7/2022	25/7/2022	6	
9	<input type="radio"/> Line shutdown	29 giorni	26/7/2022	2/9/2022	1	11
10	<input type="radio"/> DAFNE OFF - FASE LINAC+BTF	80 giorni	5/9/2022	23/12/2022		
11	<input type="radio"/> LINAC+BTF warmup, no beam	5 giorni	5/9/2022	9/9/2022	9	12 13
12	<input type="radio"/> X17 tune up	15 giorni	12/9/2022	30/9/2022	11	
13	<input type="radio"/> BTF 280 MeV primary X17 trials	15 giorni	12/9/2022	30/9/2022	11	14
14	<input type="radio"/> X17 data taking	60 giorni	3/10/2022	23/12/2022	13	



BTF

BTFEH1 – BTF1

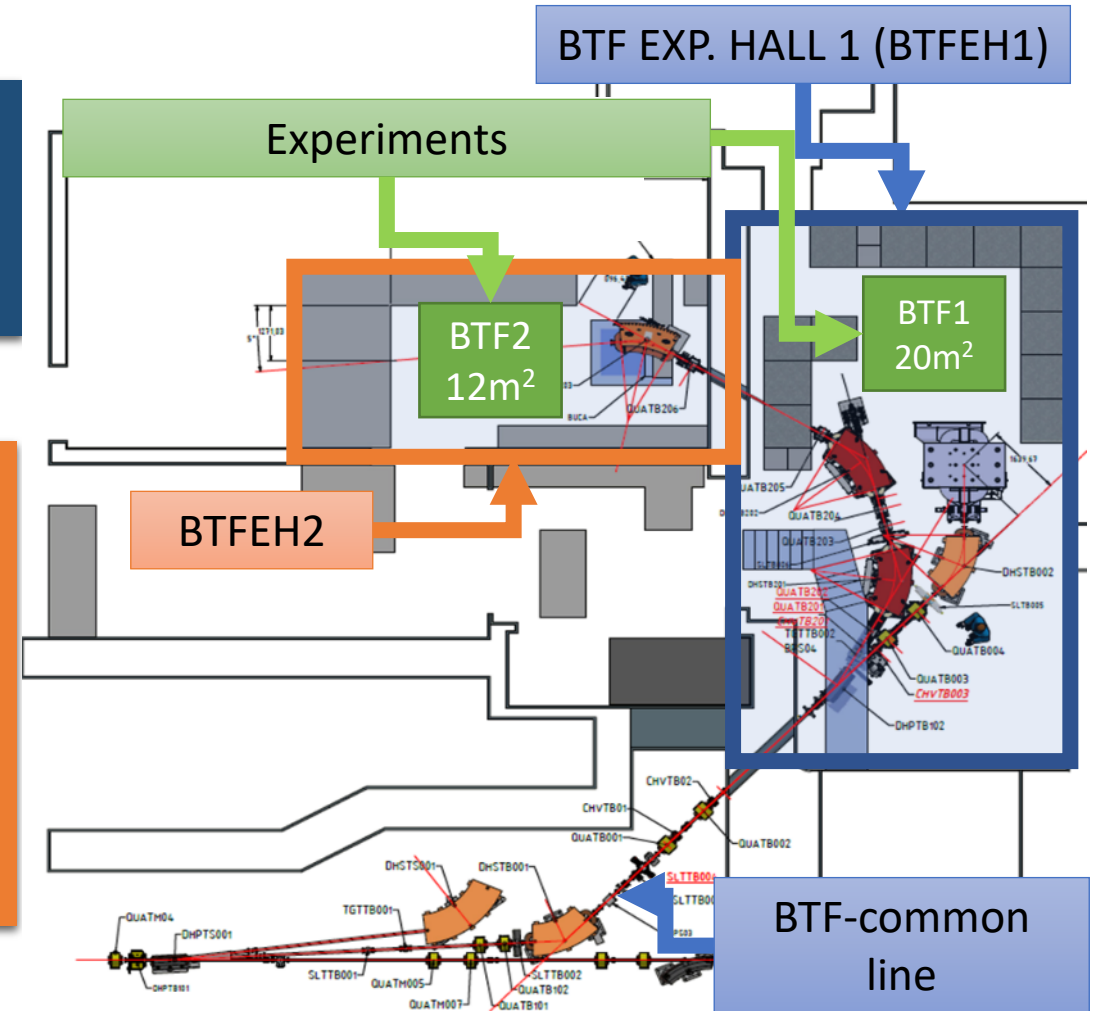
- Hall Operative but now devoted to ERAD project and PADME experiment
- Involved in opportunistic INFN user runs up to BTF2 commissioning phase 3
- Upgraded vacuum line BTF1 straight for OTR charge measurement and single shot emittance test

BTFEH2 – BTF2

- Hall operative, Beam commissioning DONE
- Only BTF2 line to external users
 - Intended for weekly based users
 - Only secondary beam
 - Limited performances respect to BTF1
 - Scheduled users up to July (half) then X17
- Involved in EUROLABS Project, start on Autumn 2022
- Beam setup ongoing
- Improved roof shielding

BTFEHs

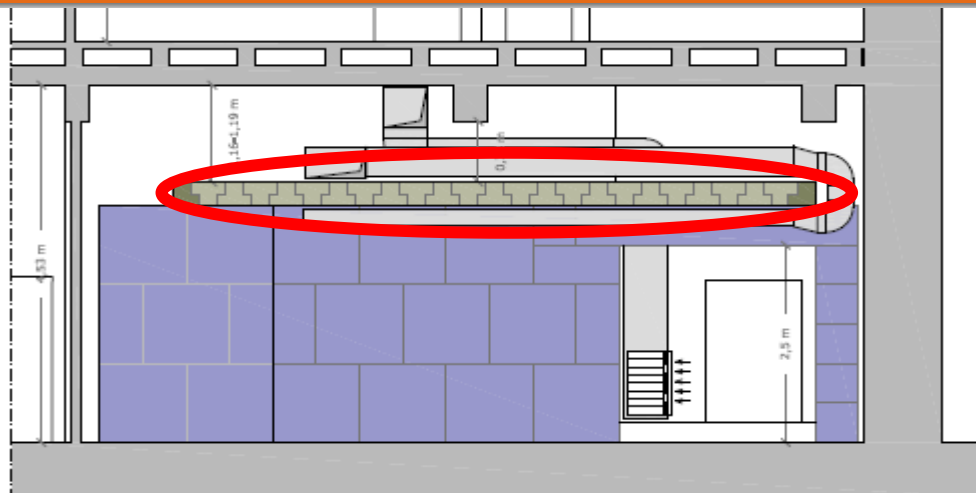
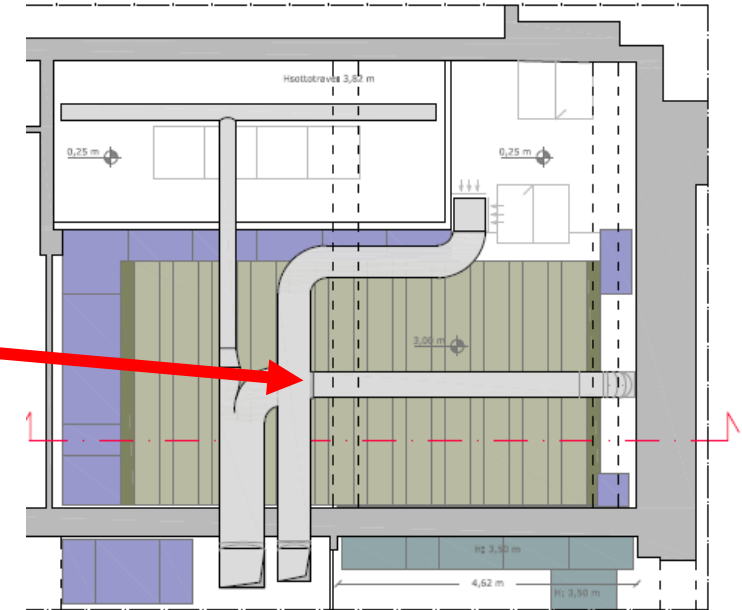
- Deploy of BTF dedicated fiber network -> 1GB/s in EH and CR Networking
- Software for automated call on going, 85% completion



ROOF SHIELDING UPGRADE

During Dec 2021 end of commissioning trials found problems on roof thickness (FISMEL/CIVIL ENG service):

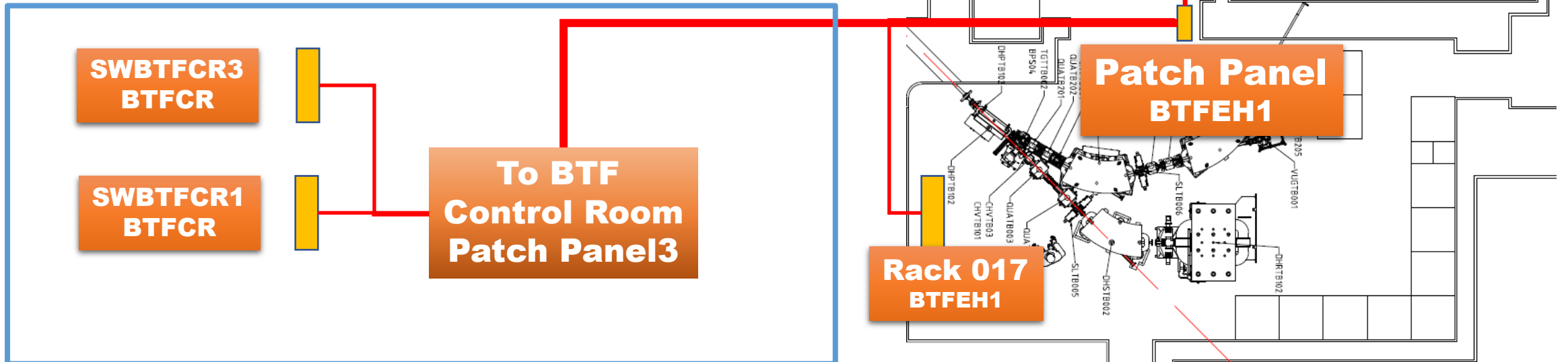
- step increase from 30 to 50cm
- Re-routing and lifting BTFEH2 air duct
- Removal of BTF shielding firewall
- Placing of 900 concrete 20x20x10cm³ bricks
- Recover walls. Operation (1 month) during KLYA maintenance



FIBER ROUTING UPDATE

Using the first fiber switch used in RUN1, deployed for PADME

- Upgrade of all the switches to the new standard (1Gb/s)
- Increase the number of ports at users disposable both in exp halls and in control room
- VLAN BTF with very low latency



BTF USERS ACTIVITIES SUMMARY

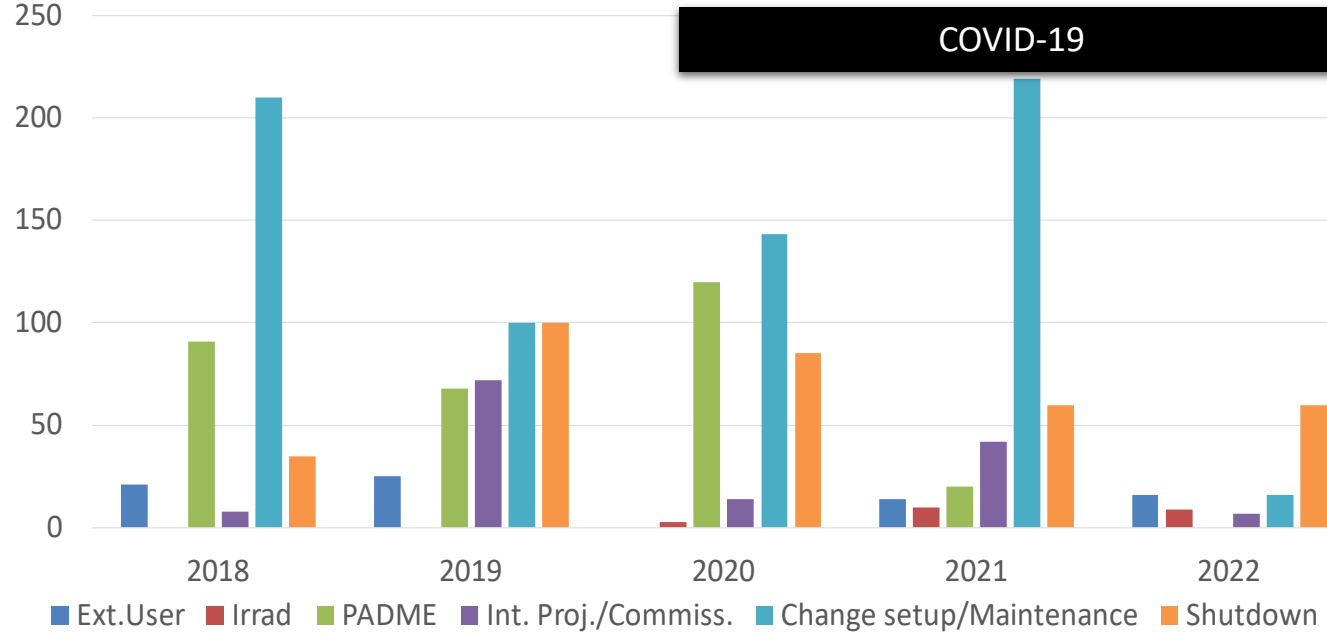
What we got from last SciCom (Autumn 2021 – Spring 2022) - Users

Detected problem on BTFEH2 roof thickness (BTFEH2 shutdown)	end of Nov 2021
Rescheduled users on BTFEH1	End Nov 2021-> 24 Jan
ERAD run	25 Jan -> 7 Feb
LINAC KLYA-KLYC conditioning	7 Feb -> 1 Apr
BTFEH2 commissioning phase 3	12 Apr -> 19 Apr
BTFEH2 call setup, calendar, management approval	1 Apr -> 24 Apr
BTFEH2 preparation for users (access, fiber networking, detectors, exp. facilities...)	19 Apr -> 1 May
First users for this beam time	9 May

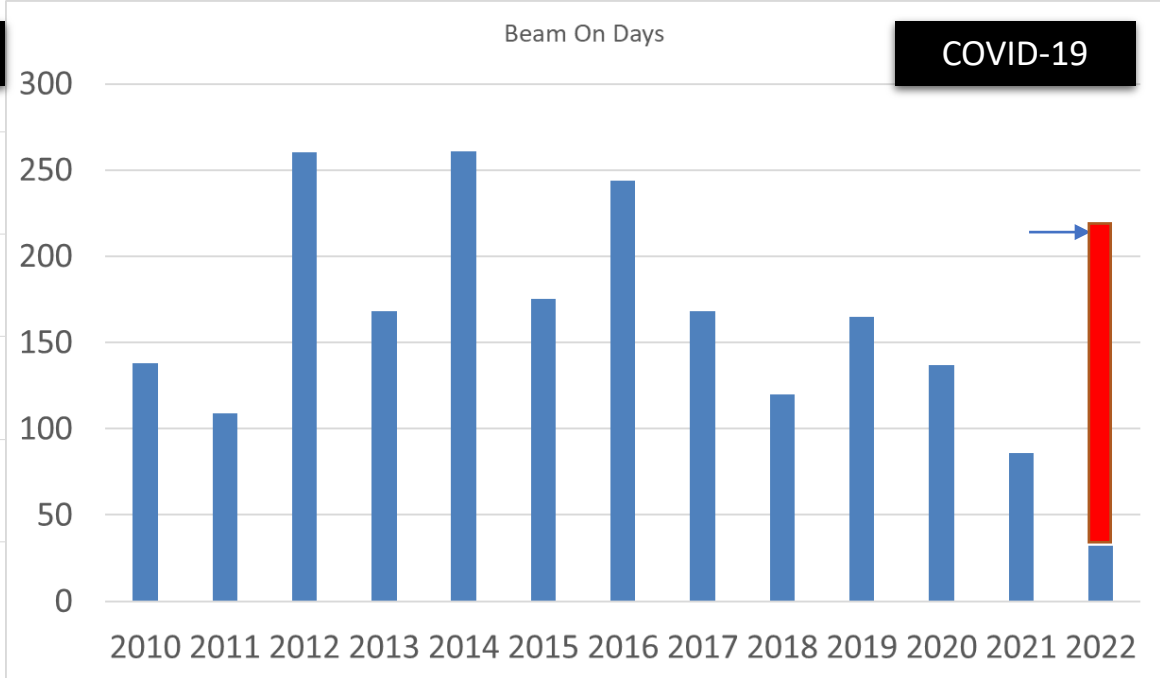
Classe	Name	Gap before [gg]	Setup day	Start date	Duration [gg]	End date	Exp. hall
ALTRO	START	0	lun	09/05/2022	0	09/05/2022	
Run approvati	LUXE first trial	0	lun	09/05/2022	3	12/05/2022	BTFEH1 STRAIGHT
Run da fissare/approvare	FOOT-LNF	0	gio	12/05/2022	4	16/05/2022	BTFEH2
Run approvati	PEROV	0	lun	16/05/2022	7	23/05/2022	BTFEH2
Run approvati	FOOT-SCINTI	0	lun	23/05/2022	4	27/05/2022	BTFEH2
Run approvati	DAFNE safety	3	ven	27/05/2022	7	06/06/2022	BTFEH2
Run approvati	SHERPA	0	lun	06/06/2022	5	11/06/2022	BTFEH2
Run approvati	LIMADOU	2	sab	11/06/2022	7	20/06/2022	BTFEH2
Run approvati	HERD	0	lun	20/06/2022	7	27/06/2022	BTFEH2
Run approvati	SPARC-ULENS	0	lun	27/06/2022	7	04/07/2022	BTFEH1 STRAIGHT
Run approvati	ERAD	0	lun	04/07/2022	7	11/07/2022	BTFEH1 STRAIGHT
Run da fissare/approvare	X17 setup	1	lun	11/07/2022	13	25/07/2022	BTFEH2

BTFUC approved

2018-2022 Activities



Beam On Days



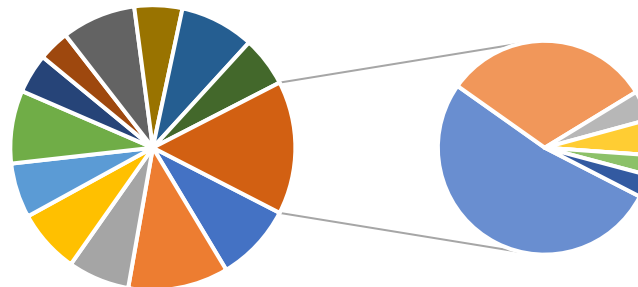
2021/2022 BTFEH1 USERS

DONE

- SHIP
- CRILIN-KLEVER
- ERAD Run 1
- SPARC-ULENS (optics lines, change vacuum layout)
- PADME for SAC calibration (change vacuum layout)
- PADME for TPX3
- PEROV
- BTF detectors calibration (some time for us)
- ERAD Run 2
- FISMEL_TLD
- AirBPM
- LUXE Target

TO BE DONE

- FOOT-LNF
- PEROV
- FOOT-SCINTI
- SHERPA
- LIMADOU
- HERD
- ERAD
- SPARC-ULENS
- PADME etagger



LNf SC63

PADME TESTS

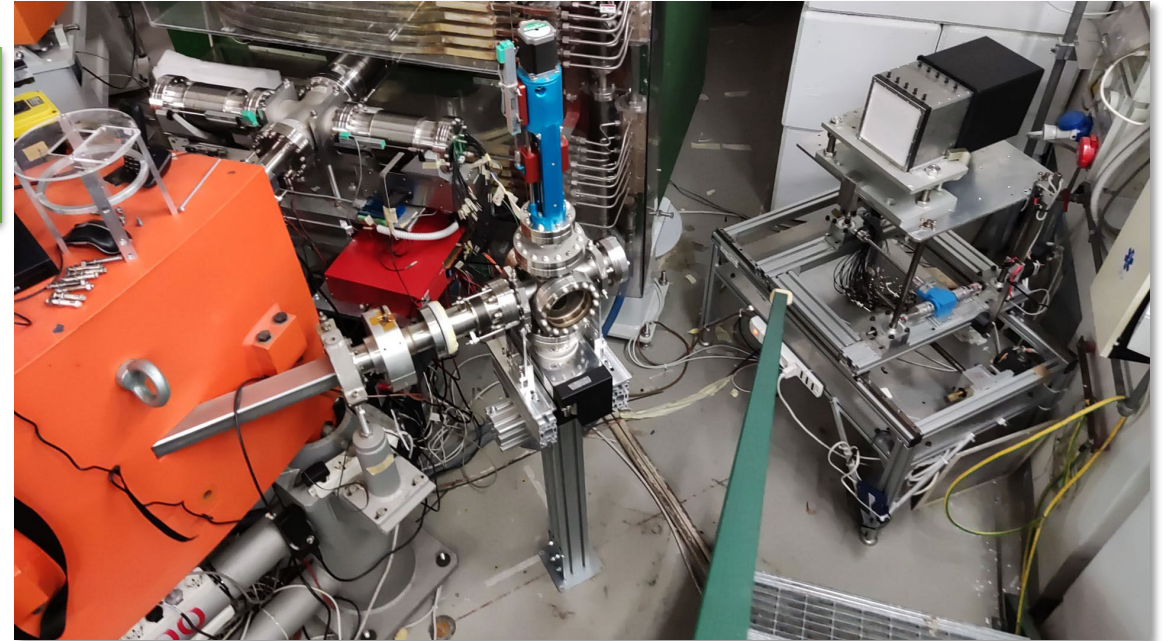
BTF USER run: PADME (BTF1 straight and BTF1 bend, setup, preparation and run) **15 Nov -> 3 Dic**

SAC calibration and TPX3 tests on BTF1 Straight,

- Beam test with different energies
- Mostly Single particle

Users wanted test vacuum on PADME vessel:

- LNF Vacuum service involved to test BTF2 line vacuum operability (OK)
- Found a small leak in target feedthrough connectors
- More vacuum trials lead to a leak also in the BTF1 Straight Ti window (changed)
- 3 weeks in total



SAC & TPX3

Electron Beam In

3 Dec -> 20 Dic

Synergistic emittance measurement system both for SPARC and BTF.

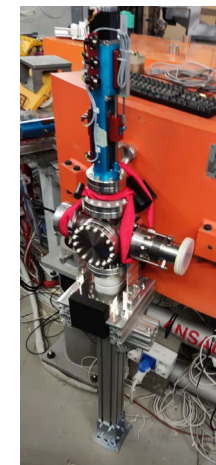
Single-shot beam emittance via a pepper-pot-like method:

-> microlens array beamlets from the beam OTR radiation produced by the OTR radiator. Single shot measurement of **beam size (OTR beam image)**, **beam divergence (from OTR ang. distr. image)**, **beam correlation (from microlens)**

The installation required another line change, thanks to S. Lauciani and A. Liedl:

- A new BTFEH1 straight structure has been design and placed in
 - a movable Aluminium mirros as OTR flag, both
 - in-air optics, two optical lines

OTR Al mirror



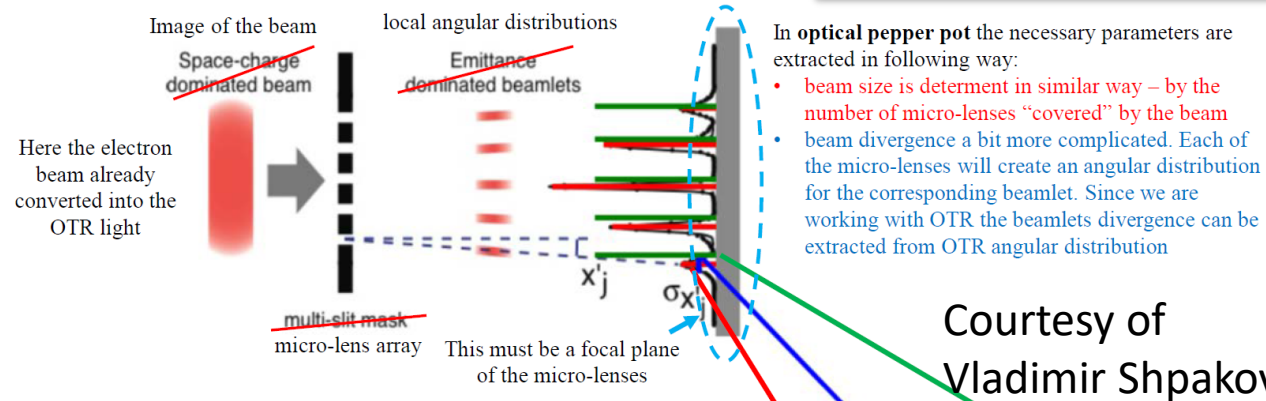
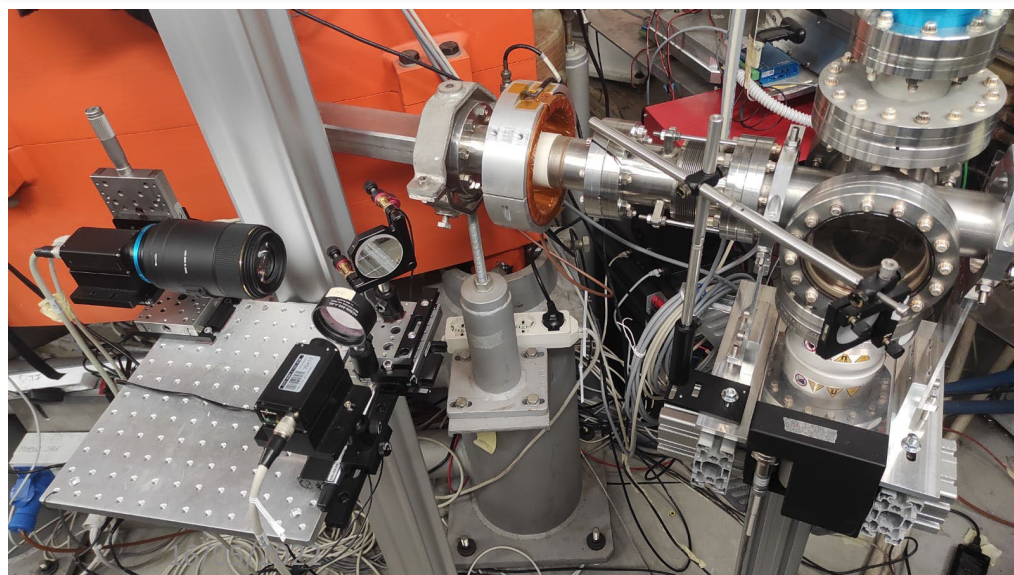
OTR image

Short focus



Valve image

Long focus



- the correlation is determent also in a similar fashion to a classical pepper pot. The sift is measured between the center of angular distribution and optical axis of the corresponding micro-lens.

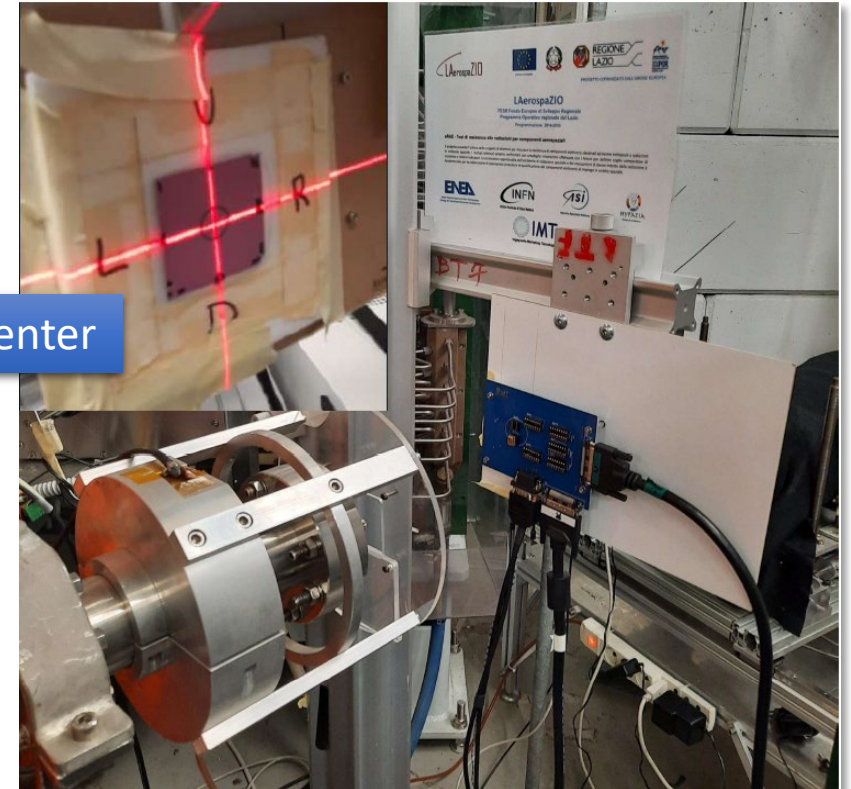
$$\varepsilon = \sqrt{\langle x^2 \rangle \langle x'^2 \rangle - \langle xx' \rangle^2}$$

BTF USER run: ERAD project: The “eRAD - Radiation resistance test for aerospace components” PROJECT funded as part of the LAerospaZIO project, presented in the call for "Strategic Projects 2019" - POR FESR Lazio 2014-2020, has been started on 11/06/2020 (BTF1 straight, setup, preparation and run) **20 Jan -> 7 Feb**

High charge irradiation run

- Users (IMT) again very happy
- Almost same DUTs as Run 1 -> reproducibility check -> OK
- Improved stability accomplished -> shot by shot fluctuation lower than 5%
- **Pandemic peak!**
 - Improved run time control for remote users
 - **Users operated DAQ/DUT tests from their office**
 - No down of service
 - **Full DAQ installation and DUT change in charge of BTF staff**
 - IMT prepared installation instruction
 - Video call as diagnostic check, run follow absolutely on ETH/Wireless
 - DUTs dismounting and installation
- Triggered camera on flag in the back and ICT upstream
- **A 3rd (final) RUN in schedule for July 2022.**
- **Project extended up to Sept 2022.**

Thanks to LNF Computing Center



ERAD @ BTF
Lucia Sabbatini, Bruno Buonomo
INFN TEAM: Bruno Buonomo, Luca Foggetta, Claudio Di Giulio, Domenico Di Giovanale, Fabio Cardelli

EUROPEAN UNION REGIONE LAZIO

eRAD
Test di resistenza alle radiazioni per componenti aerospaziali

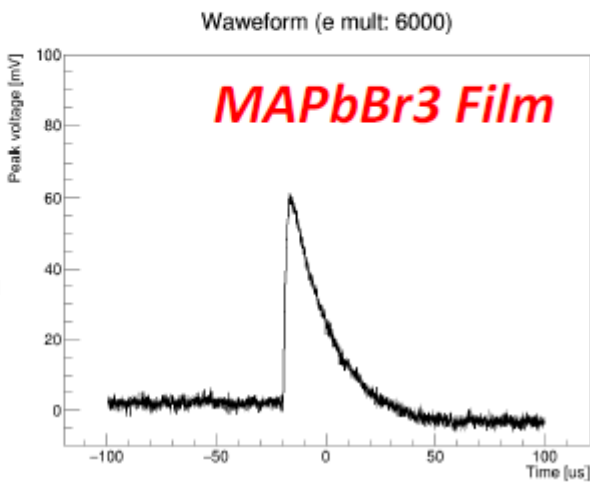
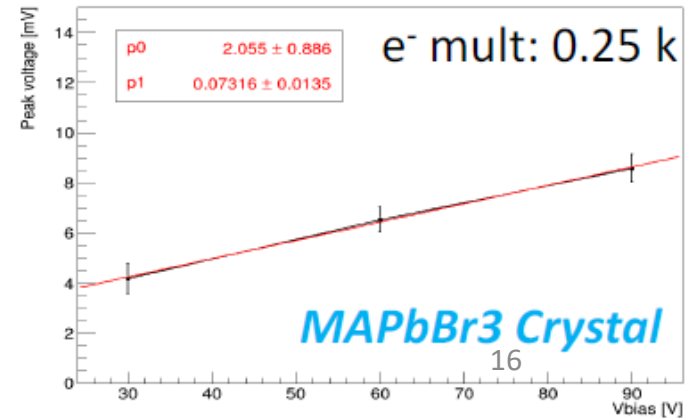
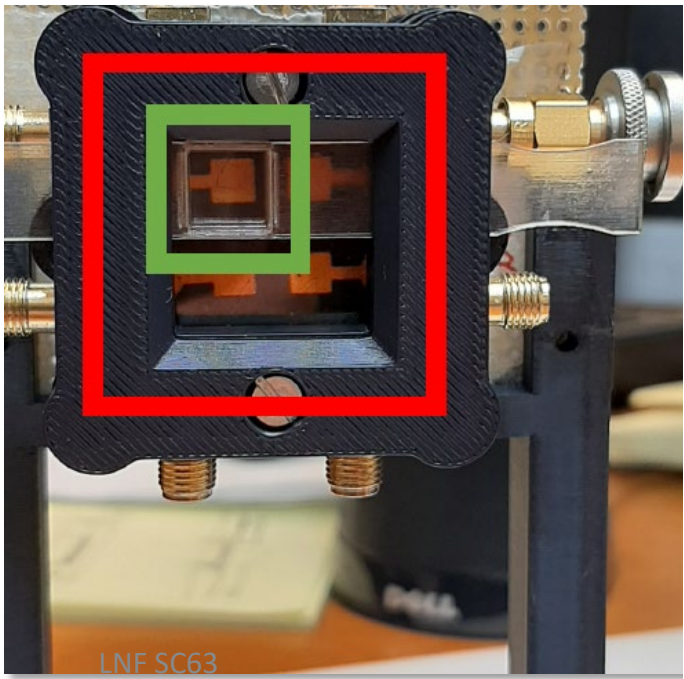
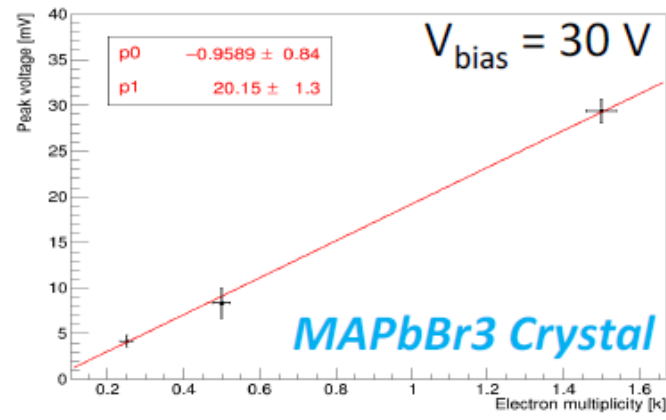
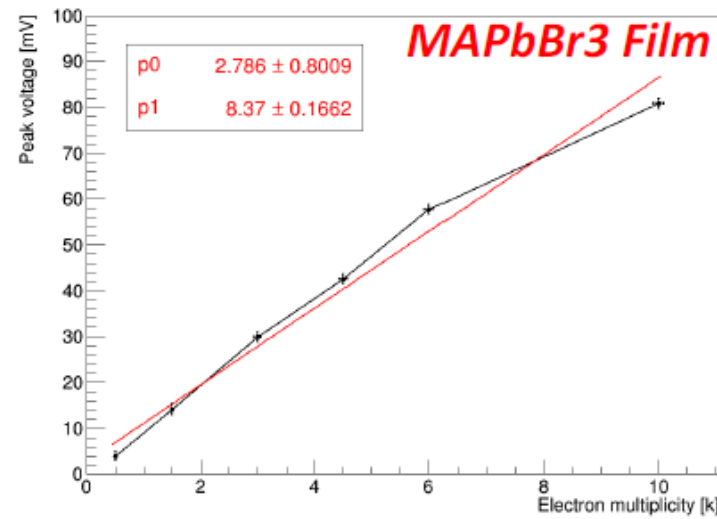
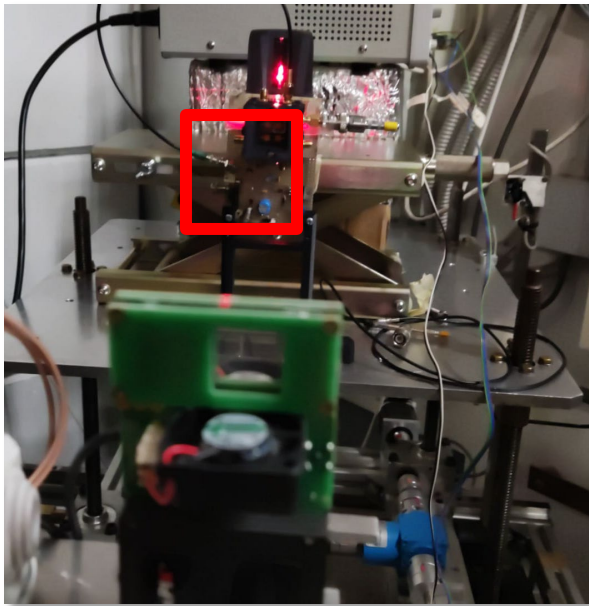
LAerospaZIO IMT INFN ASI

PEROV

BTF USER run: PEROV 7 Feb -> 9 Feb

- Organo Metal-Halide Perovskites, a class of hybrid organic-inorganic semiconductor materials with a perovskite unit-cell structure
- **One of the first test as bulk detector**
- As a preliminar response, good linearity in wide range

LYSO Crystal (7x7x5 mm³)
MAPbBr₃ film (multiple pads 4x4 mm²)
 Beam: e⁻ (@370 MeV) multiplicity from 0.5k to 10k



Courtesy of Marianna Testa

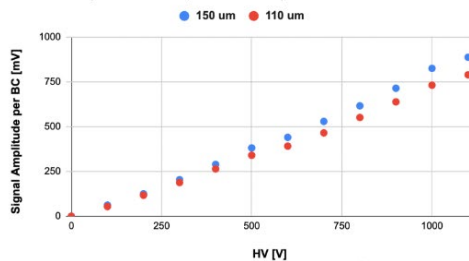
BTF USER run: LUXE (Laser Und XFEL Experiment) is a new experiment proposed at [DESY](#) and the European XFEL to study QED in the strong-field regime where QED becomes non-perturbative **9 May-> 13 May**

2 x Sapphire wafer(2in)
SITUS Technicals gmbh, Wuppertal (D),
-> Thick d1=0.11 mm
UNIVERSITY wafers (US)
-> Spessore d2=0.15 mm
2 x Circular Pads
R1= 0.8 mm («SMALL»)
R2=2.75 mm («BIG»)

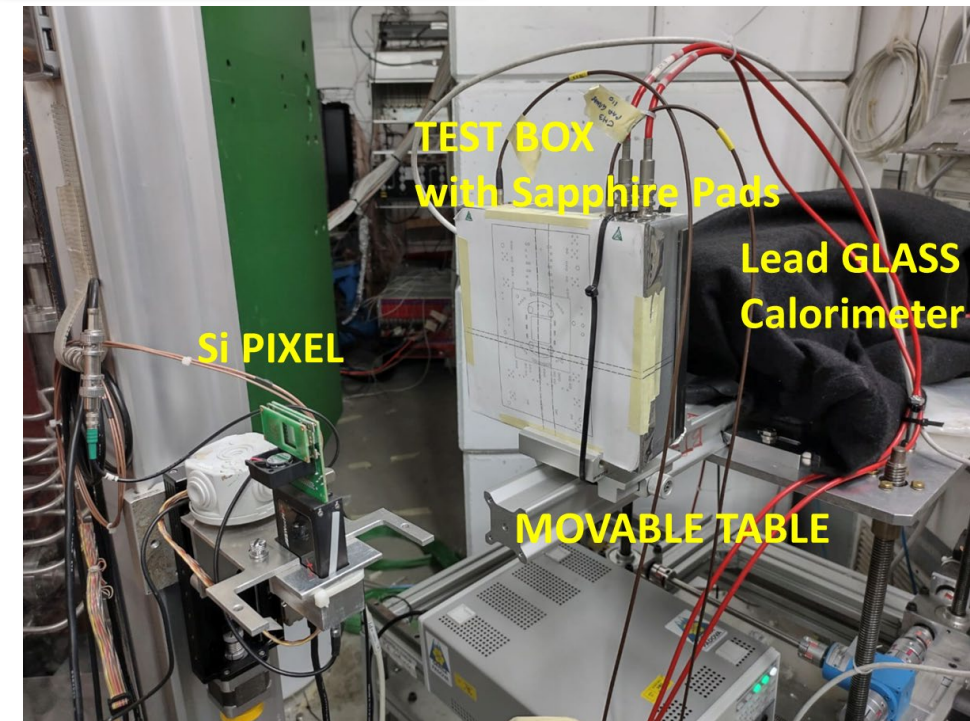
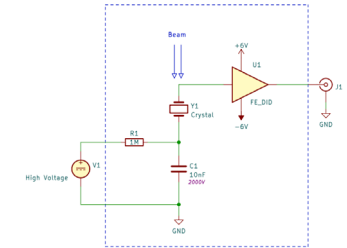
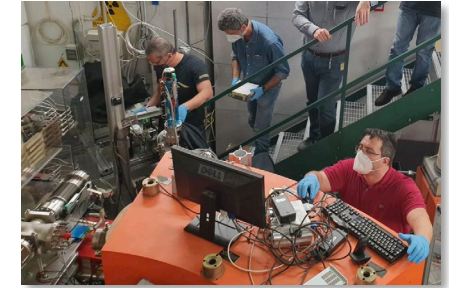
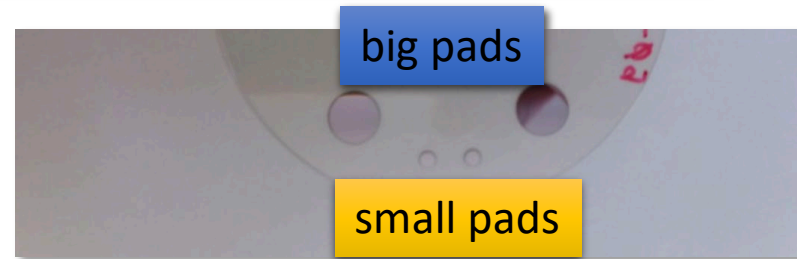
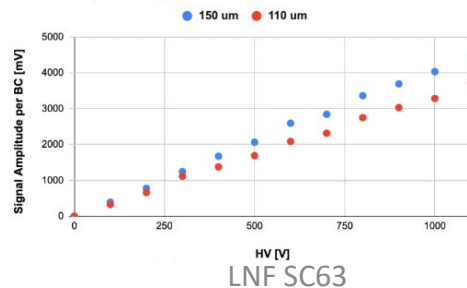
BTF beam 300MeV, m=10K scan, completely contained

- First test as Sapphire photon current integrator for LUXE experiment
- As a preliminary response, impressive linearity in wide range in multiplicity and voltage scan
- As Charged particle integrator, is very interesting for BTF activities

HV SCAN (SMALL PAD, ~ 920 el/BC)



HV SCAN (BIG PAD, ~ 490 el/BC)



Courtesy of
M.Bruschi and U.
Dosselli

USER CALL SOFTWARE

New managing tool for:

- user call, facility booking and team access, run time assistance
- Fully automated + human verification

Intended as generic tool for all LNF (and more) facilities

- Access LNF-INFN software and rules acquired
- Implementation with different level of abstraction
- Facility types and template
- Automated dispatching, lowering secretary load

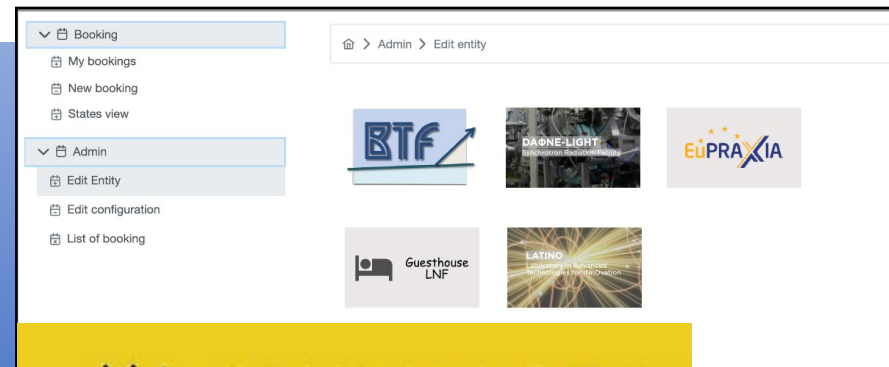
Status

UI => 100%

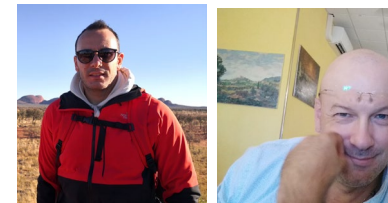
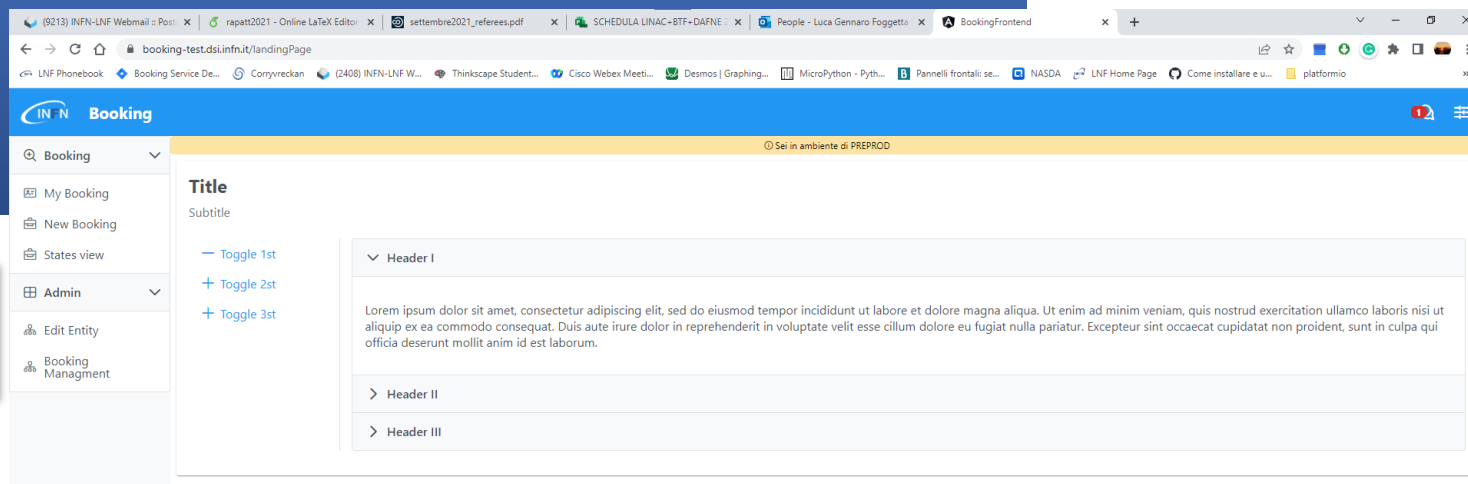
Backend => 95%

Workflow => 50%

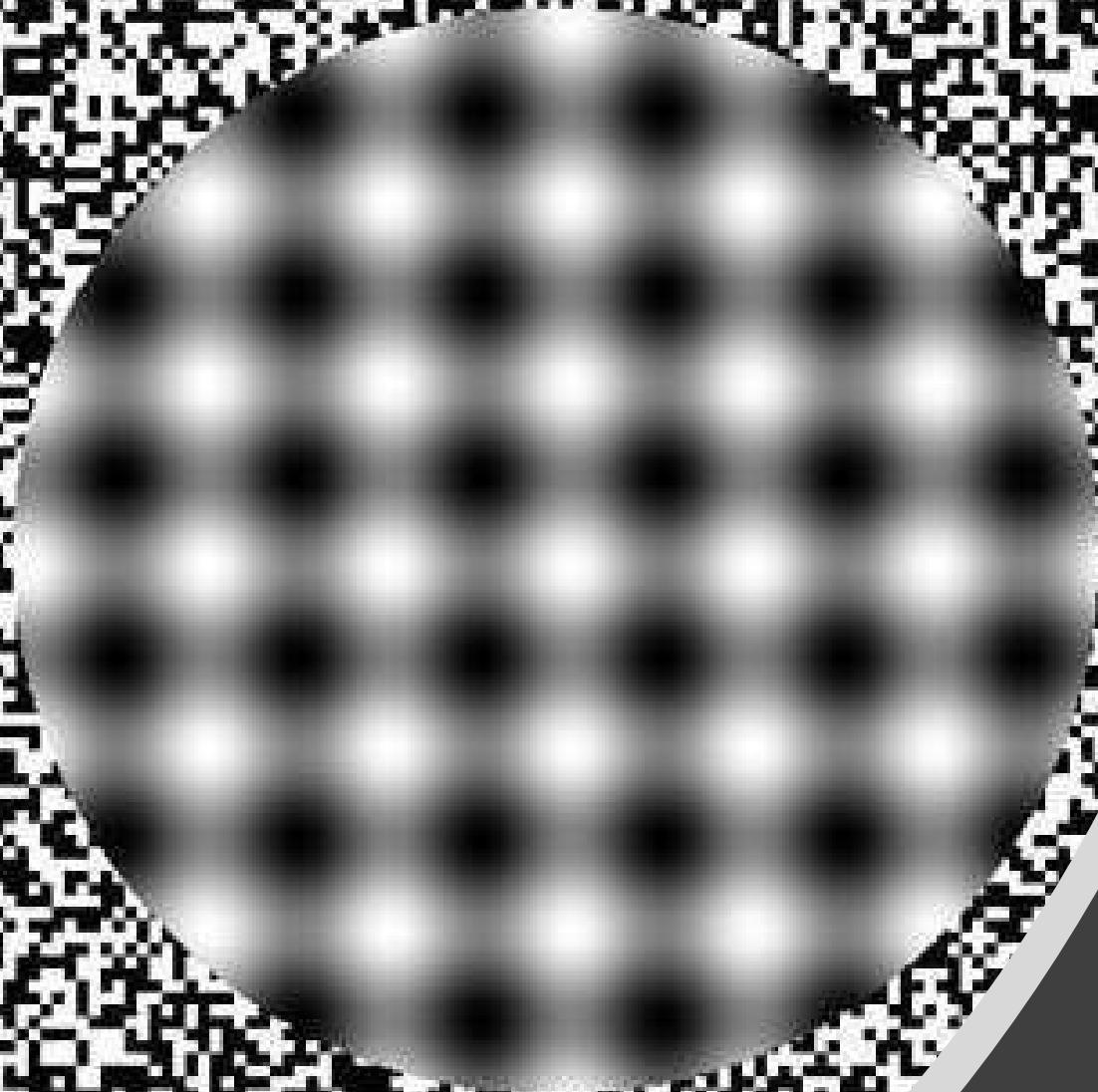
First production
release SOON



UI and data logging



Back end, workflow & integration
by BTF & Computing Service



LINAC

LINAC STAFF SCHEDULED ACTIVITIES

- **LINAC-DAFNE-BTF**

- ☐ **LINAC**

- ✓ RUN DAFNE
 - ✓ DAFNE Run coordinators:
 - ✓ Buonomo, Foggetta, Di Giulio
 - ✓ Ordinary Maintenance:
 - ✓ Modulators
 - ✓ **New Klystron A**
 - ✓ LINAC auxiliary
 - ✓ **Extraordinary Maintenance and consolidation**
 - Modulator Consolidation:
 - Solid State Power supplies
 - Upgrade
 - Realization and installation of a new modulator
 - Test Solid CERN state Switch on the new Modulator
 - DAFNE /BTF complex Safety Check 1/2

- ☐ **BTF**

- ✓ BTF2 Safety
 - ✓ BTF2 Installation and commissioning
 - ✓ **ERAD project**

- **SPARC_LAB**

- ✓ Modulator maintenance and operation (fault on CCPS of k1 and communication ILK on k3)
 - ✓ Safety Check

- **SABINA**

- ✓ REMOTE FAT for new k400 Modulator with C band klystron (due to pandemic situation)
 - ✓ New C band Modulator and klystron setup at SPARC_LAB
 - **SAT of the new k400 modulator at SPARC_LAB**
 - ✓ New directional couplers procurement

- **TEX**

- ✓ Safety Check
 - ✓ Klystron commissioning and TEST
 - ✓ Modulator SAT

- **IFAST**

- ✓ Dark Current simulations of RF structures and sources

- **SINGULARITY**

- LINAC CONTROL Memcached DATA and AI feedback test

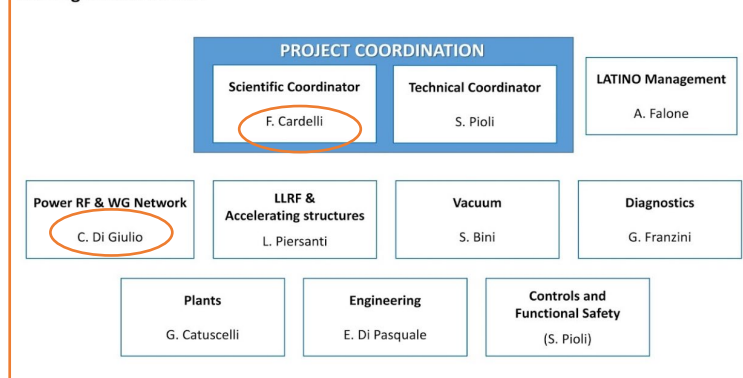
- **EUPRAXIA**

- ✓ **WP12 RF Power and distribution**

X band Source test facility for EUPRAXIA@SPARC_LAB Project

- ✓ Modulator SAT with Scandinova
- ✓ Klystron from CERN
- ✓ LINAC service starting from 15/09/21
- ✓ -> CPI Klystron installation
- ✓ -> Modulator integration with subsystem
- ✓ -> Technical support to the SAT with Scandinova
- ✓ -> Power and qualification measurements

TEX Organization Chart

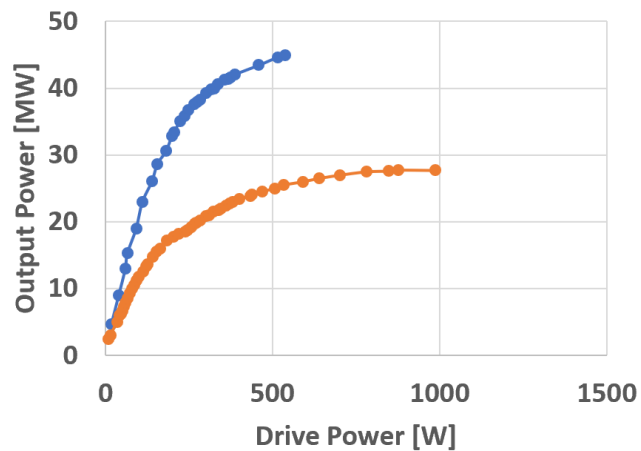


TEX RF Source:

- Scandinova k400 Solid state modulator
- 50 MW X-band CPI Klystron



Check CPI klystron Curve



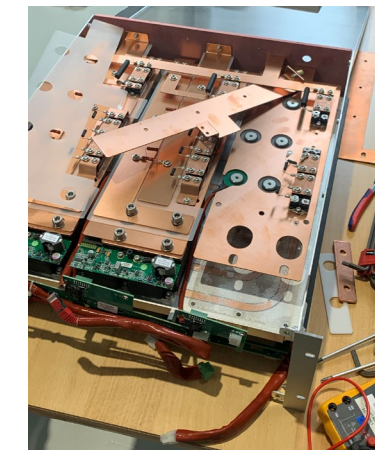
16/05/2022

Modulator Stability Measurement



LNF SC63

IGBT substitution after fault



21

SABINA (Source of Advanced Beam Imaging for Novel Applications) is a project aimed at the enhancement of the SPARC_LAB research facility.

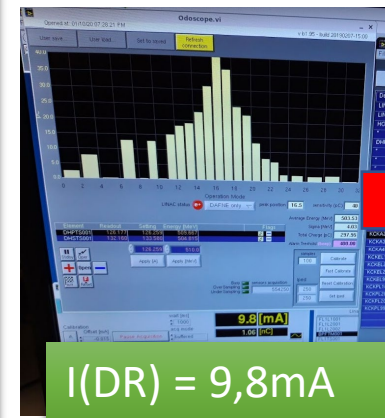
- ✓ C band Klystron checking and shipping to Scandinoa for new modulator k400 transformer tuning and their turning back.
 - ✓ New k400 Modulator remote FAT with Scandinoa.
 - ✓ LINAC service work starting from January 2022
 - > Removing the C band klystron and the old k2-2 mod
 - ✓ Modulator integration
 - > Install new k400 Modulator and C band klystron
 - > integration with subsystem
- Next Step:
- > Technical support to Scandinoa for SAT
 - > Power and qualification measurements on load before the connection with the waveguide system.
 - > Waiting the SPARC modulator hall refurbishing



LINAC STATUS

- **New Klystron on Mod A**
 - some problems in the test phase
 - power limited by sled vacuum quality
 - changing of the sled vacuum ion pump was crucial
 - KlyA max power 40MW for vacuum limit on waveguide
 - Gained enough power for positron production (charge) and injection (energy)
- KlyC has still a faulty vacuum window that led limited output power (34 MW) and pulse rep rate @25Hz
- THALES assistance for KlyC substitution delayed in 2023?
 - To be fixed
- **UPGRADE & CONSOLIDATION** still ongoing:
 - No time for this task.

Jan. 2020 before kly C DIC 2021



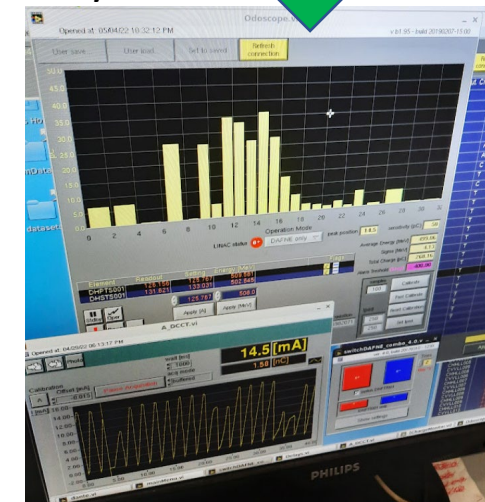
DIC 2021



APR. 2021

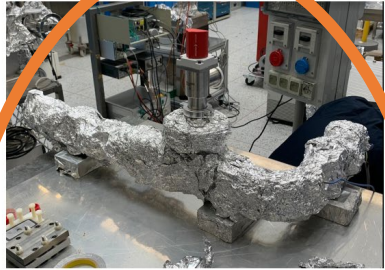


May 2022

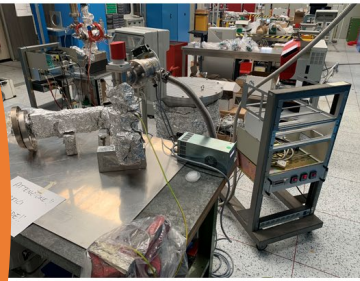


In 2021 progressively less KLYA peak power:
 -> Difficult positrons beam inj
 -> decide to change KLY at run ens
 -> restoring good inj conditions
 (Same DR inj condition)

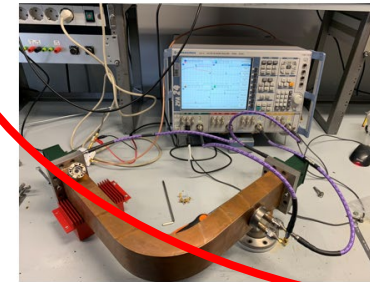
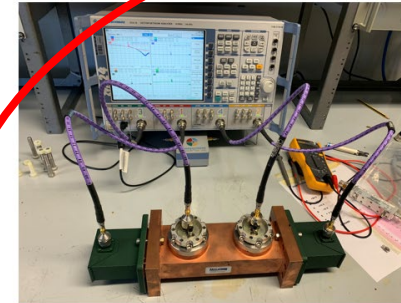
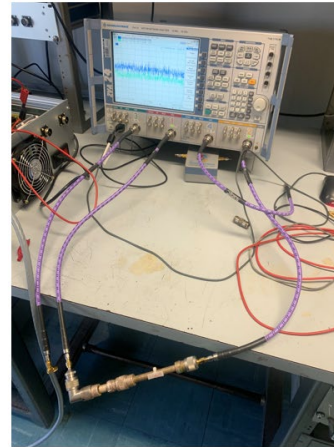
KLYSTRON A SUBSTITUTION AND TEST



Thanks to Vacuum Service
Baking at 110 °C for 24 hours.



RF measurements for the calibration of the directional
couplers and attenuators (Thanks to the RF Service)



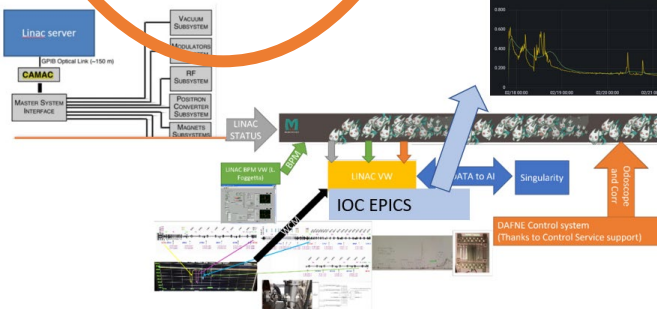
Calorimetric Measurements on kly A

C	Portata	Portata V/s	Tempo in out m/s	DTemp	DT	P (local)	P (watt)	tau s	Hz	MW
4,18000000	7,00000000	0,44163	1	0,44163	1,1	2,034987	2366,69	4,50E-09	25	21037,242

Courtesy of G. Luminati M. Martini and Fluids and Electric Services

Data conditioning history:

Thanks to D. Morigi, G. Piermarini, S. Pioli,
the data are available on GRAFANA by EPICS IOC.



All the Services of the DA and DT supported the KlyA test, from baking through the RF and Calorimetric measurements, till the final conditioning data taking

Thanks to LINAC STAFF

Oil check



RF Measurements

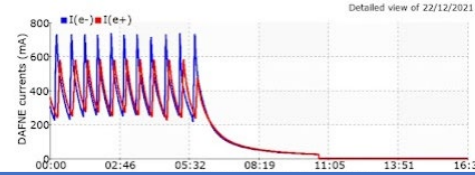


Klystron Filament curve

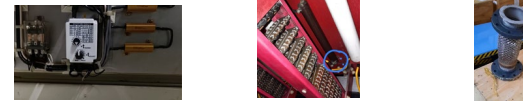


LINAC ACTIVITIES TIMELINE

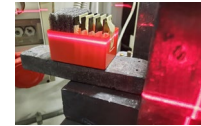
08/11/21 - 22/12/21 Still SIDDARTHA RUN



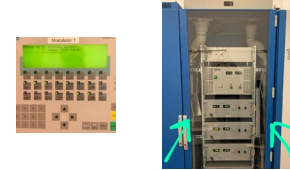
22/12/21 - 25/01/22 Maintenance (Modulator, Water system leak, Oil leak on mod C, kly A fil.)



26/01/22 – 07/02/22 RUN for ERAD e FISMEL



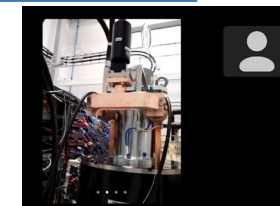
10/02/22 SPARC FAULT FOCUS P.S.



7 -15/02/2022 RF LOAD, elbow and DCs setup for test of new kly A and calorimetric measurement of RF power. Old Elbow DC calibration.
Installation of new klystron on mod A.

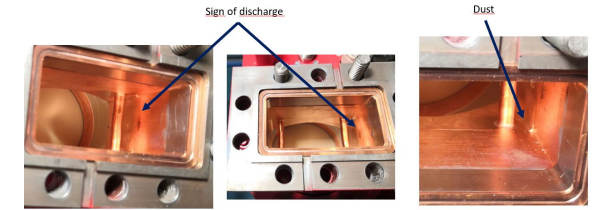


16/02/2022 SABINA Modulator remote FAT on spare C band kly.



LINAC ACTIVITIES TIMELINE

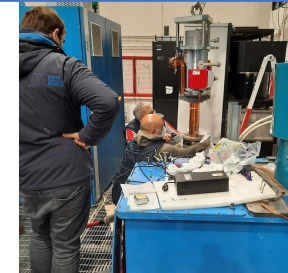
16/02/2022-24/02/2022 new kly A test, arcing problem... contacted Thales.



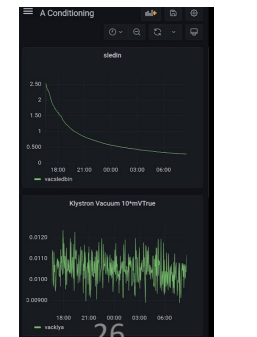
24/02/2022 kly A connected to linac RF waveguide (old elbow) conditioning until **10/03/2022 than stop the operation**. Multiple Arc and sled in pump interlock.



01/03/2022 -02/03/2022 **start operation for Sparc C band** modulator substitution (k2-2) (07/04/2022 test of modulator transport operation – 19/04/2022 new k400 in final position)



11/03/2022 -17/03/2022 **Detected problems on the old SLED vacuum ion pump**, on the kly A waveguide system and detected a leak after the SLED. For the replacement part of linac vented with nitrogen.

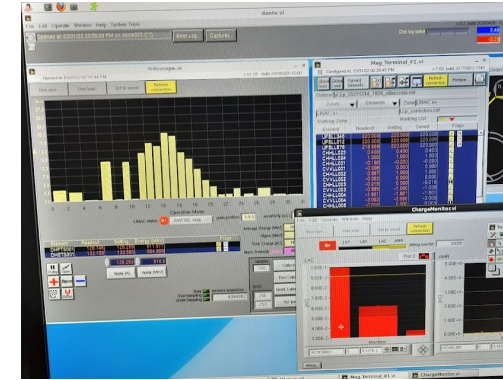


LINAC STATUS

17/03/2022-20/03/2022 problem on water pump of positron converter, the spare part does not work properly.



20/03/2022-28/03/2022 new kly A conditioning and kly C conditioning (still some problem on waveguide system of mod A and mod C)



31/03/2022 FIRST linac positrons

04/04/2022 LINAC ready for the operation of the Siddhartha RUN started
07/04/2022

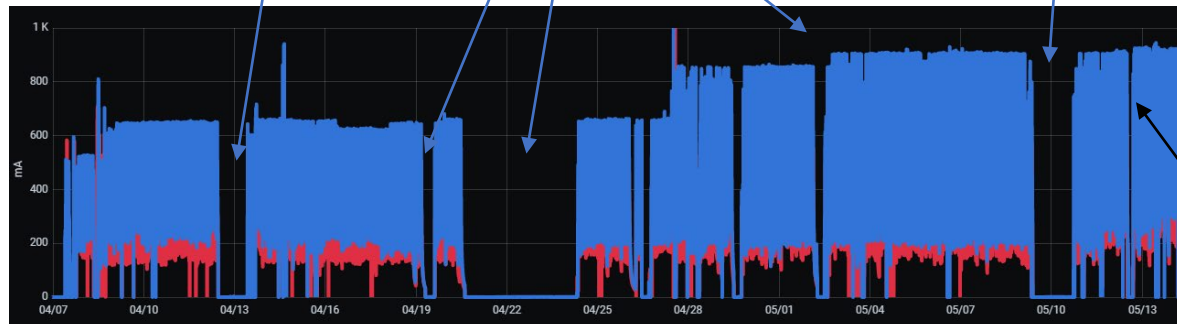
19/22 04/2022 LINAC stop for mod C conditioning

13/04 Thyatron on mod A (>8000 h)

10/05/2022 LINAC stop for cooling tower fixing.



ALL those activities were possible thanks to the strong support of the the Accelerator and Tecnical Division Services and the support of the Safety, FILMEL and Administrative Department!



12/05/2022 LINAC stop UFS water leak

2022

[The PADME beam line Monte Carlo simulation](#)

[F. Bossi](#) (Frascati), [P. Branchini](#) (INFN, Rome3), [B. Buonomo](#) (Frascati), [V. Capirossi](#) (Polytech. Turin), [A.P. Caricato](#) (INFN, Lecce and Salento U.) et al.

e-Print: [2204.05616](#) [hep-ex]

[The SHERPA experiment](#)

[Marco Garattini](#) (Frascati), [Davide Annucci](#) (Rome U. and INFN, Rome), [Oscar R. Blanco Garcia](#) (Frascati), [Paola Gianotti](#) (Frascati), [Susanna Guiducci](#) (Frascati) et al.

DOI: [10.22323/1.380.0080](#)

Published in: PoS PANIC2021 (2022), 080

[The SHERPA experiment](#)

[Marco Garattini](#) (Frascati), [D. Annucci](#) (Rome U. and INFN, Rome), [O.R. Blanco-Garcia](#) (Frascati), [P. Gianotti](#) (Frascati), [S. Guiducci](#) (Frascati) et al.

DOI: [10.22323/1.398.0878](#)

Published in: PoS EPS-HEP2021 (2022), 878

[The physics program of the PADME experiment](#)

PADME Collaboration • [A.P. Caricato](#) (INFN, Lecce and Salento U.) et al.

DOI: [10.1088/1402-4896/ac41eb](#)

Published in: Phys.Scripta 97 (2022) 2, 024003

[Crystal slow extraction of positrons from the Frascati DAΦNE collider](#)

[M. Garattini](#) (Frascati), [D. Annucci](#) (Rome U. and INFN, Rome), [O.R. Blanco-Garcia](#) (Frascati), [P. Gianotti](#) (Frascati), [S. Guiducci](#) (Frascati) et al.

e-Print: [2110.02816](#) [physics.acc-ph]

DOI: [10.1103/PhysRevAccelBeams.25.033501](#) (publication)

Published in: Phys.Rev.Accel.Beams 25 (2022) 3, 033501

2021

[The Frascati Beam Test Facility New Line: From Design to Beam Commissioning.](#)

[Claudio Di Giulio](#), [Bruno Buonomo](#), [Fabio Cardelli](#), [Domenico Di Giovenale](#), [Luca Foggetta](#)

DOI: [10.18429/JACoW-IBIC2021-MOPP05](#)

Published in: JACoW IBIC2021 (2021), MOPP05

[Kaon–proton strong interaction at low relative momentum via femtoscopy in Pb–Pb collisions at the LHC](#)

ALICE Collaboration • [Shreyasi Acharya](#) (Calcutta, VECC) et al.

e-Print: [2105.05683](#) [nucl-ex]

DOI: [10.1016/j.physletb.2021.136708](#) (publication)

Published in: Phys.Lett.B 822 (2021), 136708

[Searching for a Dark Photon Signal with PADME](#)

PADME Collaboration • [F. Oliva](#) (INFN, Lecce and Salento U.) for the collaboration.

DOI: [10.31526/ACP.BSM-2021.1](#)

Published in:

[The PADME beam line Monte Carlo simulation](#)

[F. Bossi](#) (Frascati), [P. Branchini](#) (INFN, Rome3), [B. Buonomo](#) (Frascati), [V. Capirossi](#) (Polytech. Turin), [A.P. Caricato](#) (INFN, Lecce and Salento U.) et al.
e-Print: [2204.05616](#) [hep-ex]

[Search for a Dark Photon with the PADME experiment](#)

[Stefania Spagnolo](#), [A.P. Caricato](#), [M. Martino](#), [I. Oceano](#), [F. Oliva](#) et al.
DOI: [10.22323/1.398.0186](#)
Published in: PoS EPS-HEP2021 (2022), 186

[Machine Learning Based Middle-Layer for Autonomous Accelerator Operation and Control](#)

[Stefano Pioli](#), [Bruno Buonomo](#), [Fabio Cardelli](#), [Paolo Ciuffetti](#), [Domenico Di Giovenale](#) et al.
DOI: [10.18429/JACoW-ICALEPCS2021-THAL03](#)
Published in: JACoW ICALEPCS2021 (2022), THAL03

[The physics program of the PADME experiment](#)

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DOI: [10.18429/JACoW-IBIC2021-MOPP05](#)
Published in: JACoW IBIC2021 (2021), MOPP05

[The PADME detector](#)

PADME Collaboration • [J. Alexander](#) (Cornell U., Phys. Dept.) et al.
DOI: [10.1088/1402-4896/ac2542](#)
Published in: Phys.Scripta 96 (2021) 12, 124026

[Performance of scintillating tiles with direct silicon-photomultiplier \(SiPM\) readout for application to large area detectors](#)

[A. Balla](#) (Frascati), [B. Buonomo](#) (Frascati), [V. Cafaro](#) (INFN, Bologna), [A. Calcaterra](#) (Frascati), [F. Cardelli](#) (Frascati) et al.
DOI: [10.1088/1748-0221/17/01/P01038](#)
Published in: JINST 17 (2022) 01, P01038

[DAΦNE Commissioning for SIDDHARTA-2 Experiment](#)

[Catia Milardi](#) (Frascati), [David Alesini](#) (Frascati), [Oscar Blanco-García](#) (Frascati), [Manuela Boscolo](#) (Frascati), [Bruno Buonomo](#) (Frascati) et al.
DOI: [10.18429/JACoW-IPAC2021-TUPAB001](#)
Published in: JACoW IPAC2021 (2021), TUPAB001

[The Extended Operative Range of the LNF LINAC and BTF Facilities](#)

[Luca Foggetta](#), [Maurizio Belli](#), [Bruno Buonomo](#), [Fabio Cardelli](#), [Riccardo Ceccarelli](#) et al.
DOI: [10.18429/JACoW-IPAC2021-THPAB113](#)

[Josephson Junctions as Single Microwave Photon Counters: Simulation and Characterization](#)

[Alessio Rettaroli](#), [David Alesini](#), [Danilo Babusci](#), [Carlo Barone](#), [Bruno Buonomo](#) et al.
DOI: [10.3390/instruments5030025](#)
Published in: Instruments 5 (2021) 3, 25

[The Physics Program of the PADME Experiment](#)

PADME Collaboration • [P. Gianotti](#) (Frascati) et al.
DOI: [10.5506/APhysPolBSupp.14.35](#)
Published in: Acta Phys.Polon.Supp. 14 (2021), 35

[A study of muon-electron elastic scattering in a test beam\(2021\)](#)

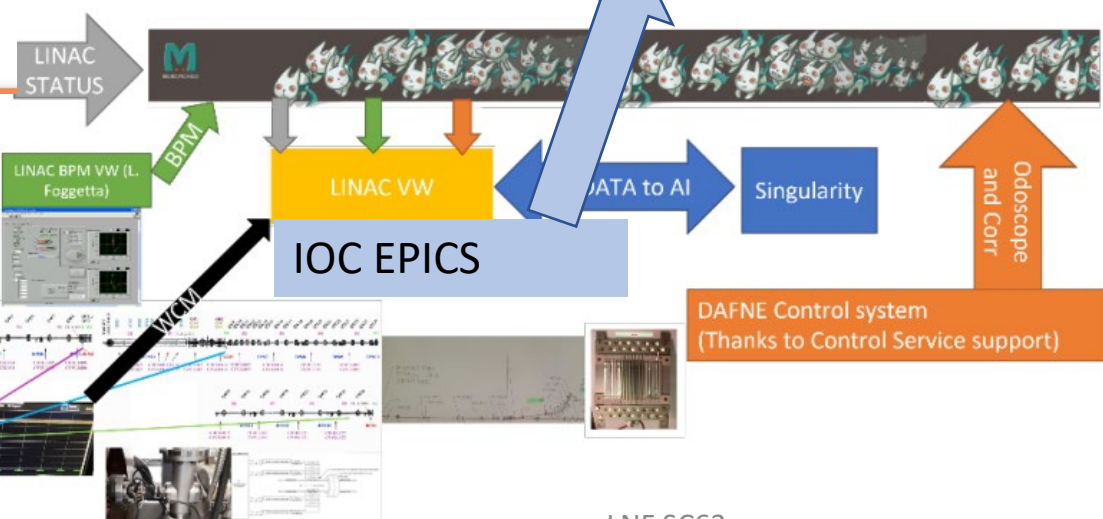
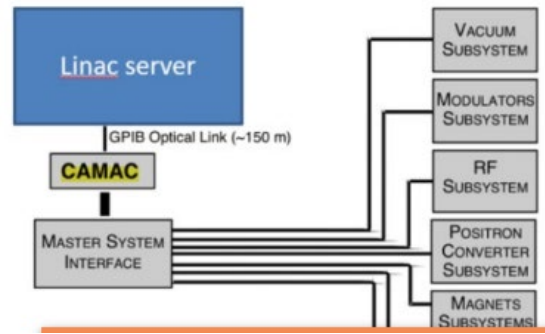
[Soldani, M.](#) et al
DOI: [10.1088/1748-0221/16/06/P06005](#)
Published in: Journal of Instrumentation Open Access Volume 16, Issue 6 June 2021 Article number P06005

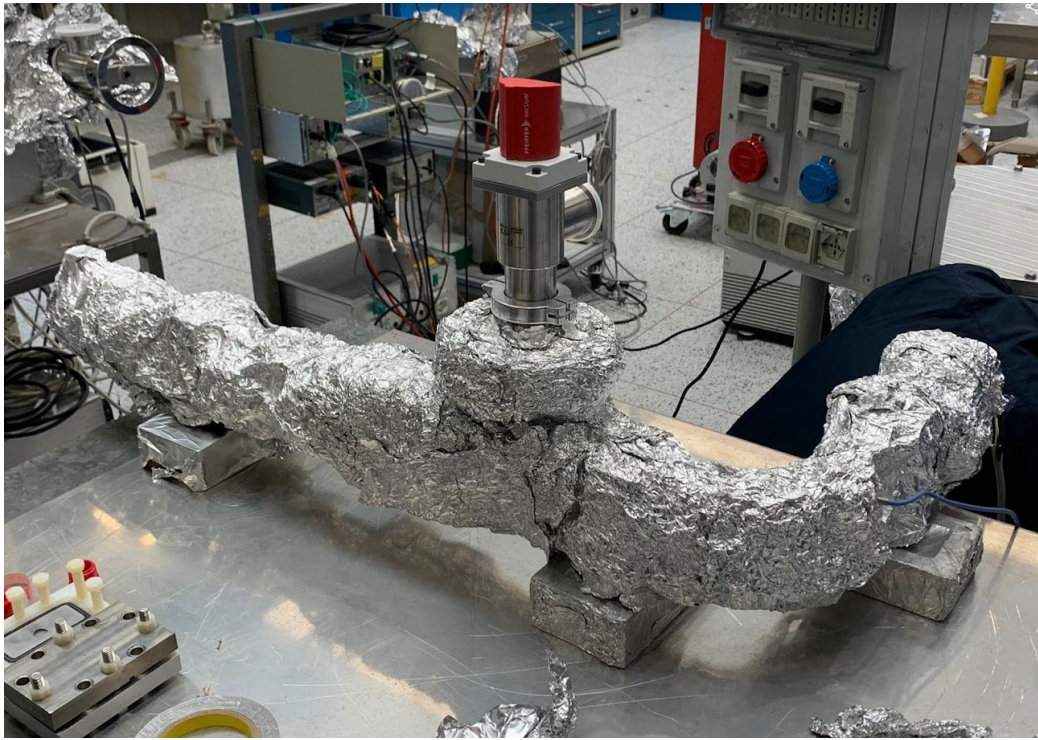
- BTF1 & BTF2 lines operative
- BTFEH1 and BTFEH2 still having users in spite of the period
- BTF activities scheduling has been presented, till 2023
- LINAC KLYA has been changed, LINAC infrastructure overhauled
 - Still having some problems on KLYC
- LINAC and BTF staff involved in many projects, fully booked

SPARE SLIDES

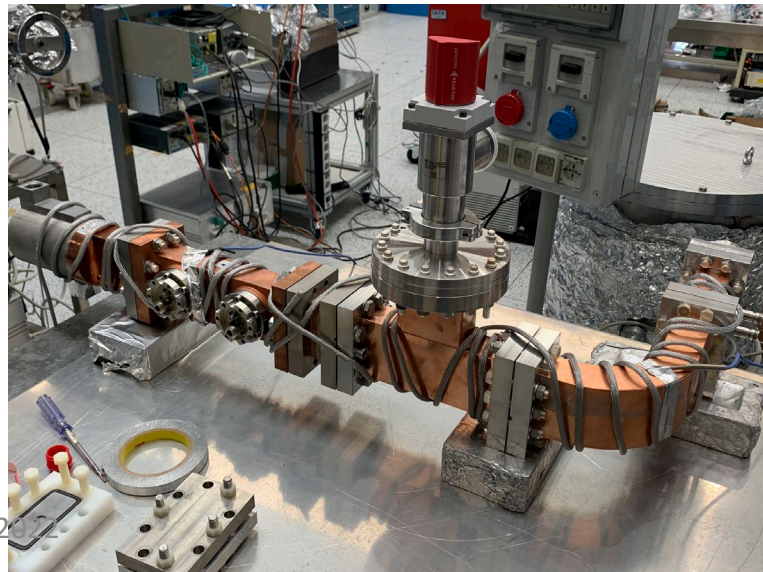
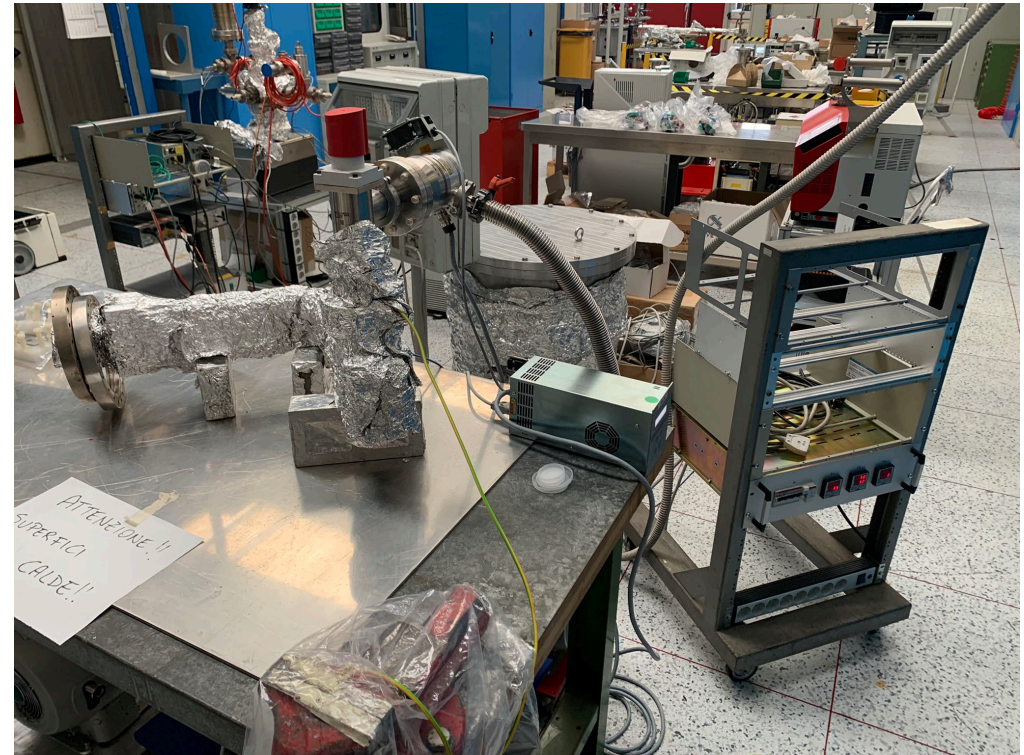
Data conditioning history:

Thanks to D. Moriggi, G. Piermarini, S. Pioli, the data are available on GRAFANA by EPICS IOC.





Thanks to Vacuum Service
Baking at 110 °C for 24 hours.

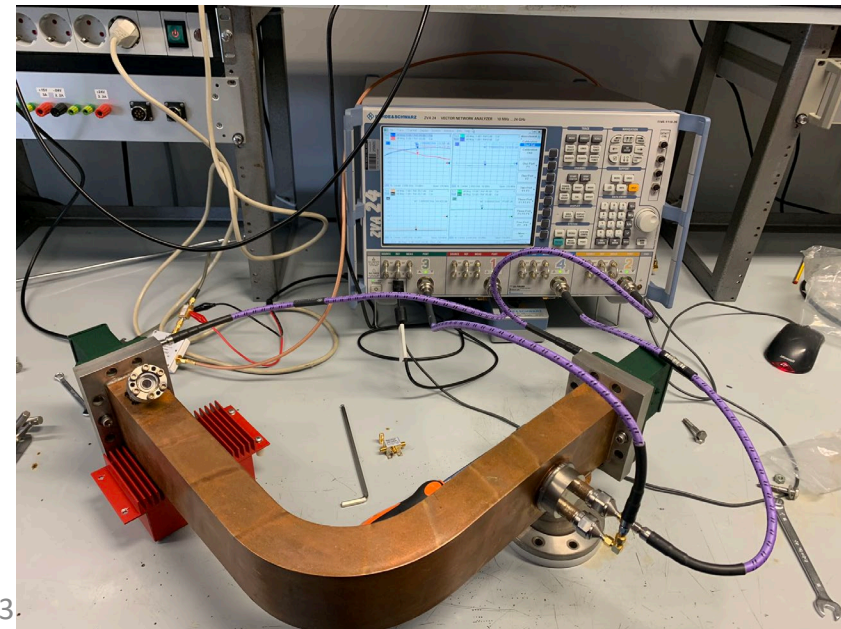
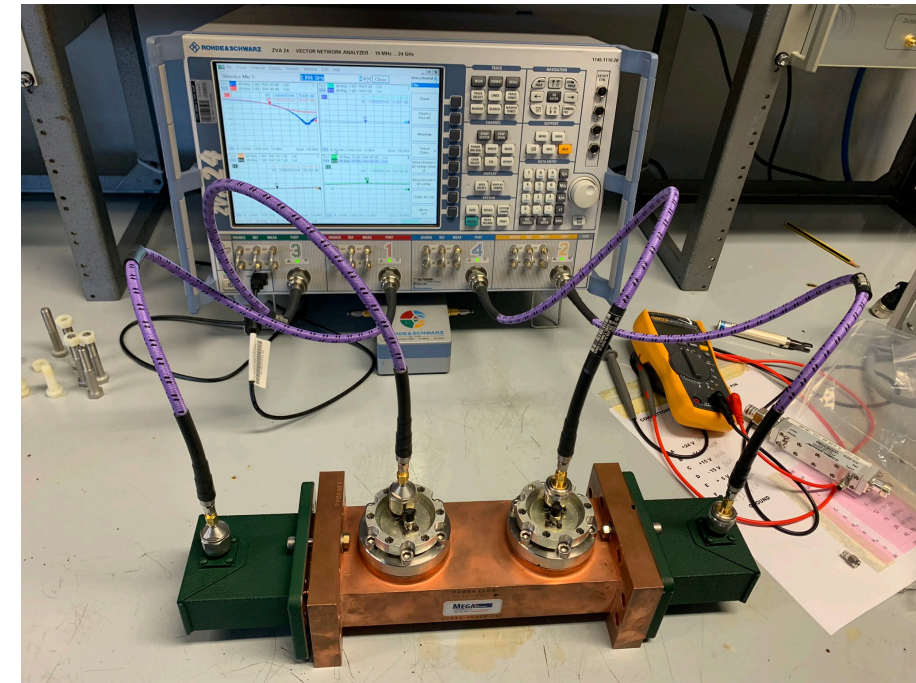
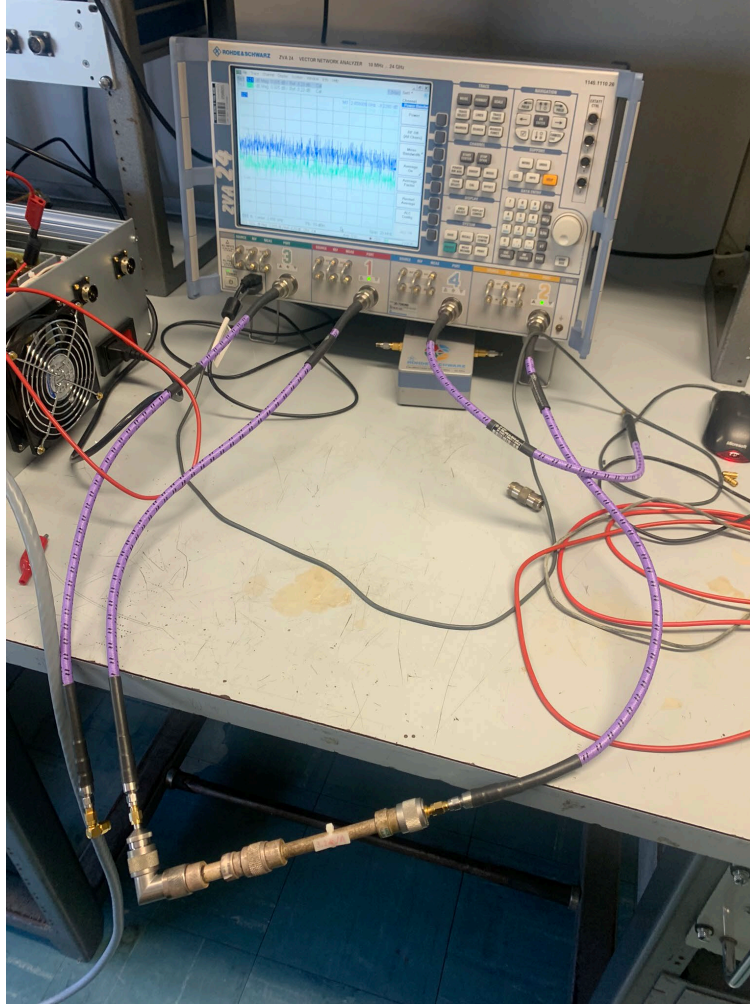


16/05/2022

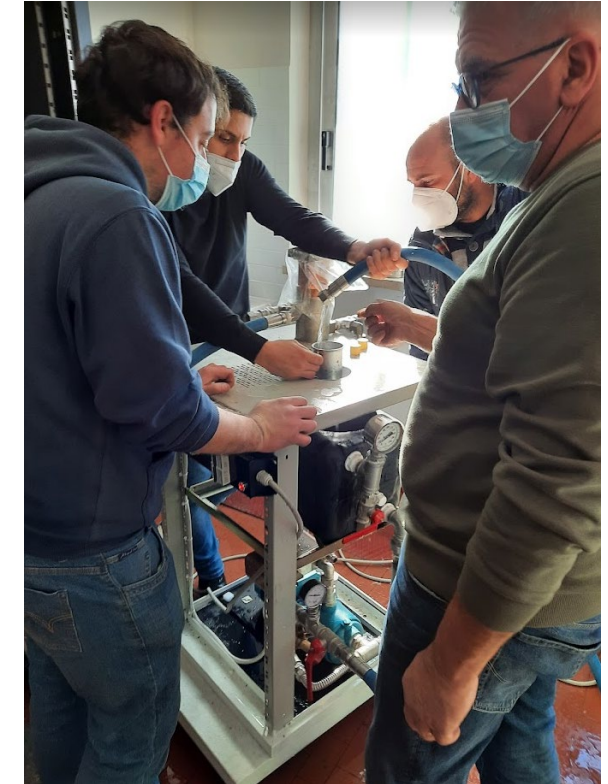
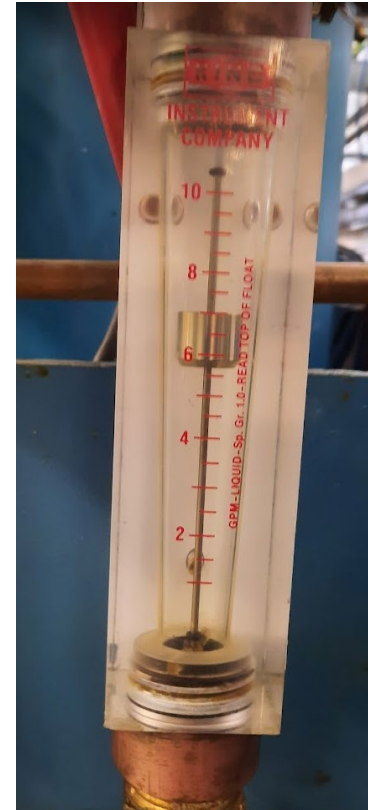
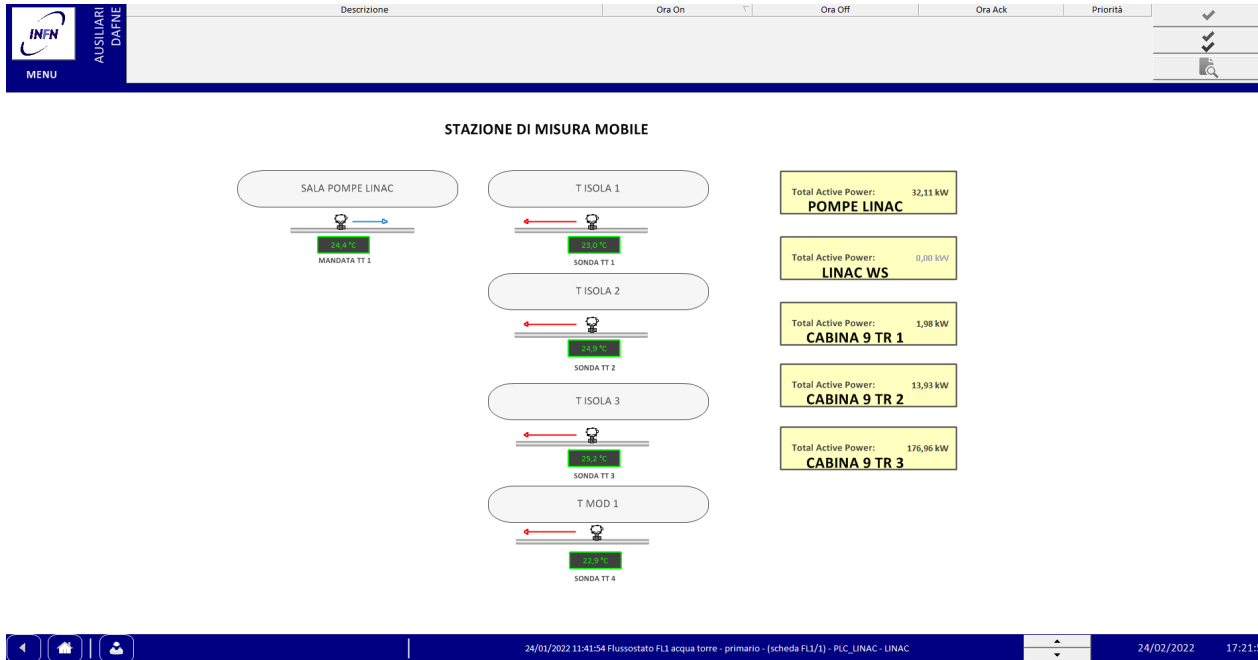
LNf SC63

33

RF measurements for the calibration of the directional couplers and attenuators (Thanks to the RF Service)

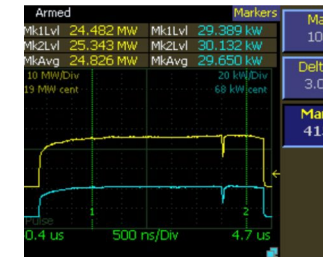


Calorimetric Measurements on kly A



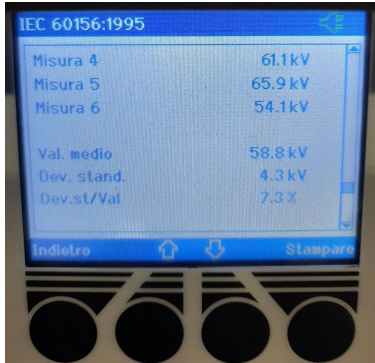
Courtesy of G. Luminati M. Martini G. Catuscelli
Fluids and Electric Services

C	Portata	Portata l/s	Tempo in out	$m=F \cdot D \cdot \text{tempo}$	DT	P (kcal)	P(watt)	tau s	Hz	MW
4,18900000	7,00000000	0,44163	1	0,44163	1,1	2,034987	2366,69	4,50E-09		25 21037,242

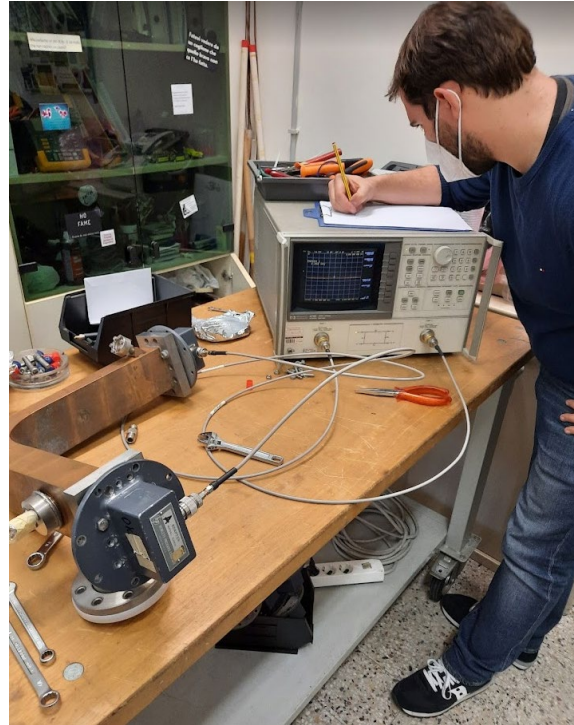


Thanks to LINAC STAFF

Oil check



RF Measurements



Klystron Filament curve

