

# FASER activities in 2021 YETS

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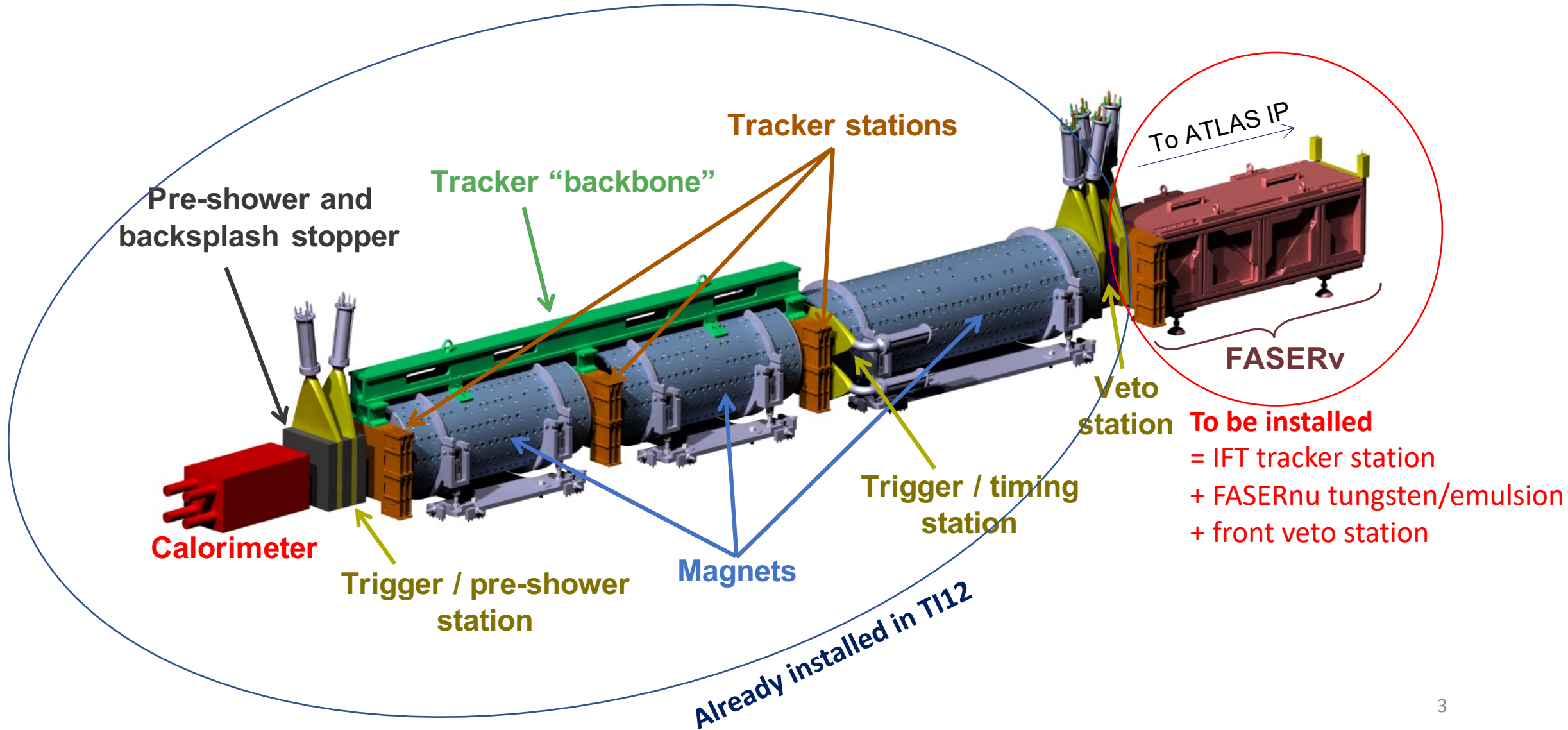
TREX meeting

15/10/21

# Overview

- Reminder of currently situation in TI12
- FASER works in 2021 YETS
  - IFT installation
  - FASERnu installation/removal test
- Brief plans for early 2022

# Reminder: FASER Detector



# Current Situation in TI12

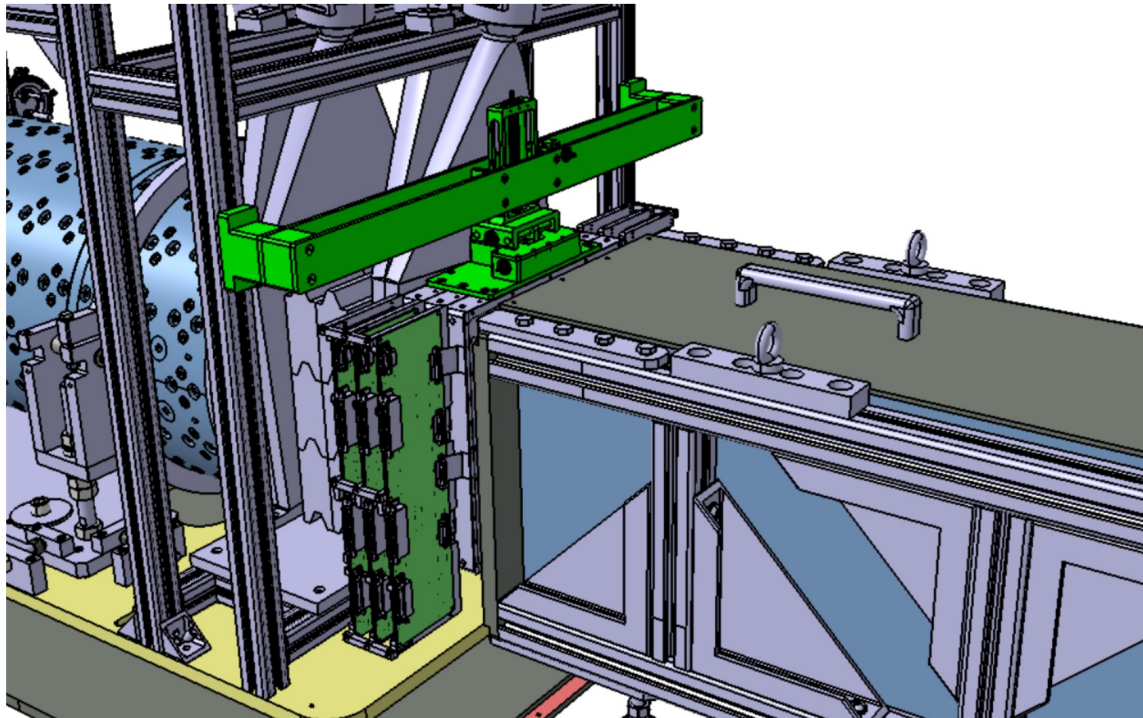


Main detector fully installed in March 2021.  
Taking cosmic data since then – gained very useful operational experience.  
Final ‘General Safety Acceptance Visit’ with HSE on 15/9 – no major issues identified.  
Follow ups in EDMS: 2645417  
To be addressed in November.

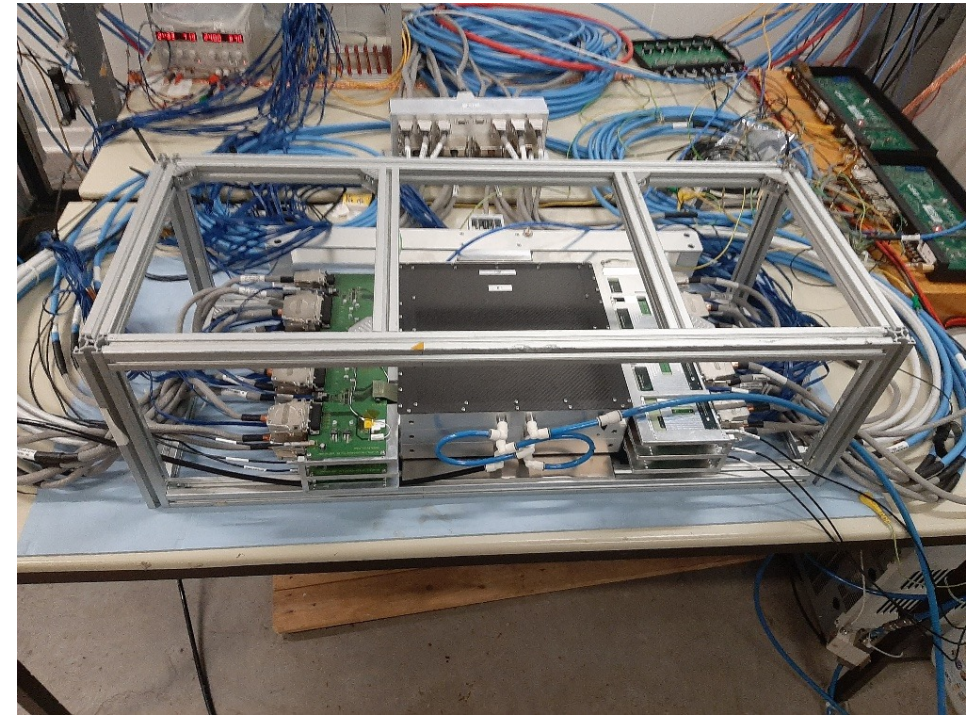


# IFT Installation

The IFT tracker station will be installed into TI12 in November. All components for this are available. The IFT is identical to the 3 FASER tracker stations already installed, so we have a lot of experience in the needed installation and commissioning steps.



IFT will be attached to the upper frame of the FASER detector. Position will be adjustable, and will be surveyed after final positioning.



IFT under commissioning on the surface.

# IFT Installation Schedule

Preliminary draft schedule:

	M (8/11)	T (9/11)	W (10/11)	T (11/11)	F (12/11)
morning	Install IFT	Survey (BE-GM)	Commissioning		Safety inspection (EP-SO)
afternoon	Cable	Connect cooling (EN-CV)			

Need input from:

- EN-HE to transport items to TI12 (hopefully can be done week before)
- BE-GM (C. Vendeuvre) for survey
- EN-CV (O. Crespo-Lopez) for connection of cooling and dry air

Expect installation and commissioning to be completed within 1 week.

Informally discussed schedule with Camille/Olivier and Marzia – IMPACT created and sent to Marzia (not approved yet):

<https://impact.cern.ch/impact/secure/?place=editActivity:181910>



In April did a first installation test of the FASERnu box (this needs to be exchanged every LHC TS).

Draft procedure for FASERnu installation/removal has been written by EN-HE:

<https://edms.cern.ch/document/2566070/1>



EN Engineering Department

EDMS NO. **2566070** REV. **1.0** VALIDITY **VALID**

Date : 2021-04-28

## FASERnu transport and handling procedure

DOCUMENT PREPARED BY: M. Perez Ornedo  
DOCUMENT CHECKED BY: C. Bertone, S. Pelletier  
DOCUMENT APPROVED BY: J. Boyd, F. Cadoux

### GENERAL DESCRIPTION

Procedure of installation of the FASERnu experiment.

### REQUIRED EQUIPMENT

- 2X Pallet truck
- Pallet + multilayer wood plate
- FASERnu rail
- Hoists at UJ12
- Platform R-2865 and its lifting beams
- PM15 crane
- Slings
- Shackles
- Tractor x2
- Truck

### REQUIRED PERSONNEL

EN-HE handling team.

### SECURITY REQUIREMENTS

- Security Perimeter.
- Radioprotection equipment: normal and operational dosimeter for each person.
- Safety protective equipment such as gloves, helmet with lamp and shoes.
- Portable ODH detector when crossing the arcs and self-rescue mask.

### CATIA AND DRAWINGS CODES

- 3D model of the area: ST1144282\_01

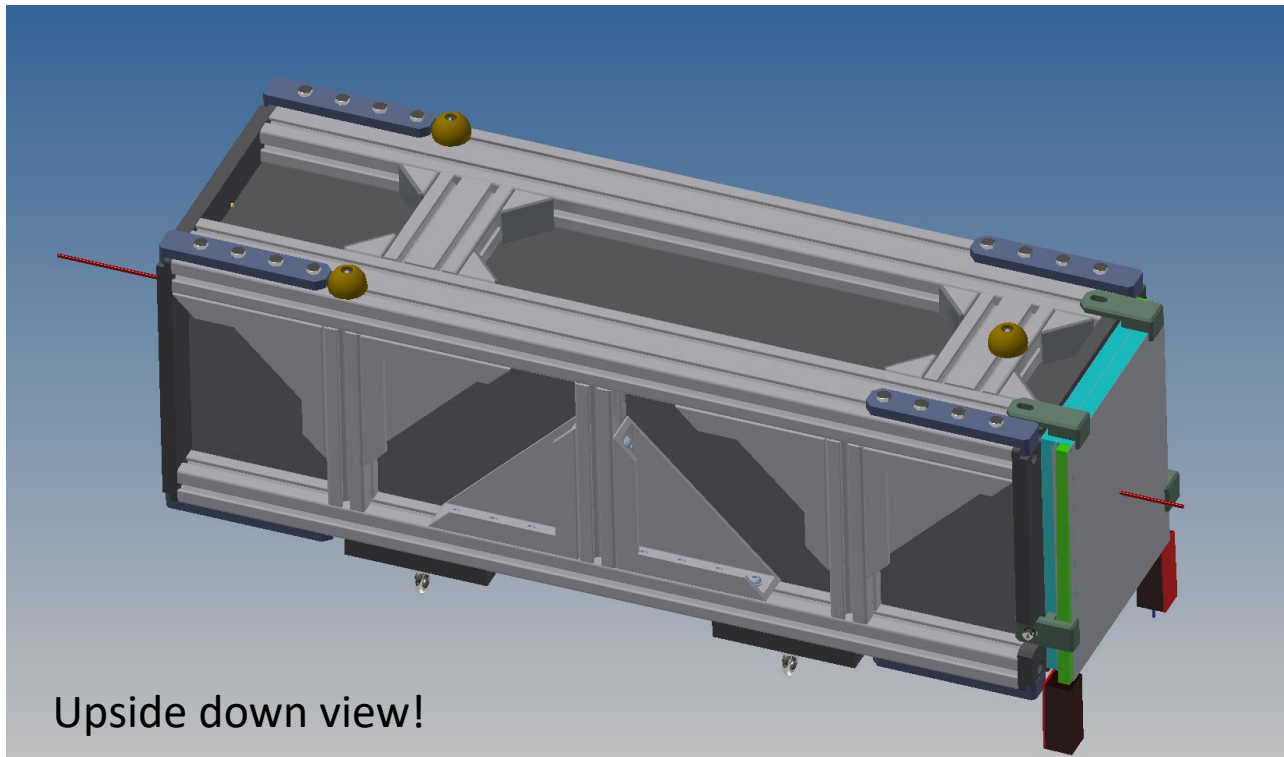


# FASERnu installation test

Plan a second installation test in November:

- Fully loaded box (1.3tonnes total)
- With IFT installed (delicate handling near fragile silicon detector!)
- Slightly modified FASERnu box, based on input from previous installation test

Need to iterate with EN-HE best slot for this test (should take <1day, but need load test of T112 crane before).



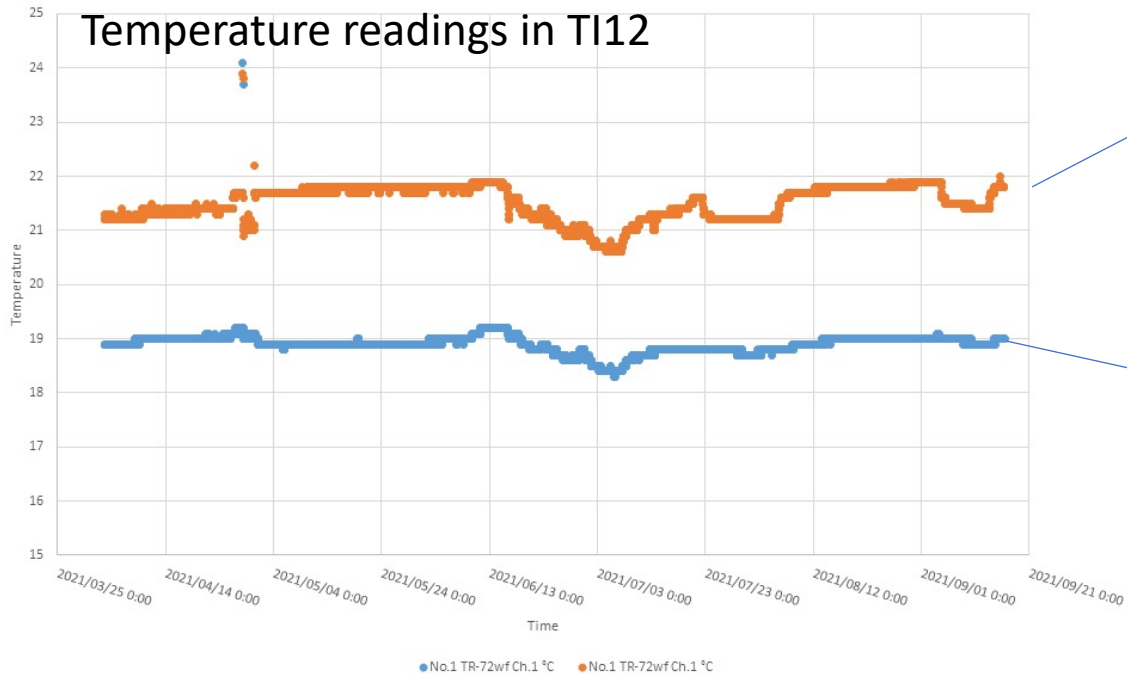
Upside down view!

Modifications to FASERnu box (4 legs -> 3 legs)  
 Legs smaller than before and non-adjustable  
 Brass legs to allow easier sliding of box into final position.



# Other FASERnu work

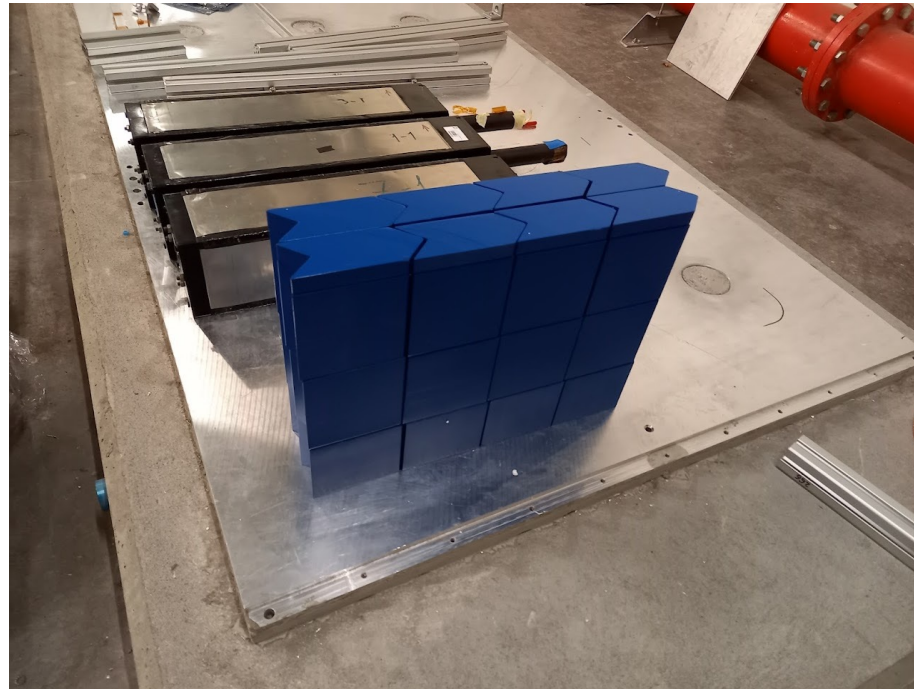
- Investigating thermal insulation of FASERnu box/trench – e.g. using aerogel thermal insulation
  - Already cover is reducing temperature significantly
- Draft RP procedure for FASERnu box exchange discussed with A. Infantino (RP)
- With SND:
  - Progress on storing detector in underground area while dark room in use by other experiment
    - TAG41 in AWAKE area
  - Progress on refurbishment of CERN dark room (including CV equipment)



# Other FASER work

Small other work to be done in YETS 2021/22

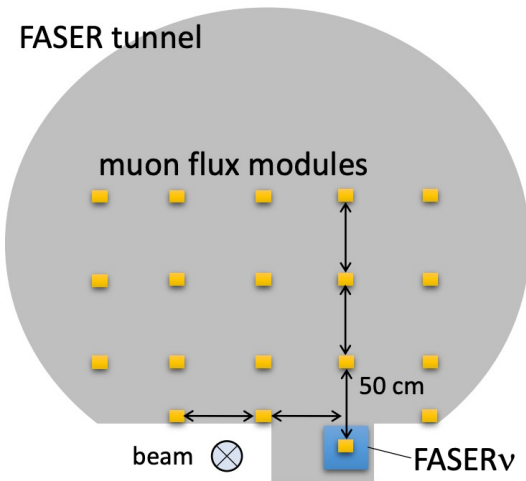
- Install faraday cage around calorimeter PMTs to reduce electronic noise from GSM antenna (situated very close to the detector)
- Update the network configuration from TI12->SR1 rack
  - Does not require installation of new fibers, but installation of new connection to switch and patch fibers
- Install Lead wall into FASER veto station



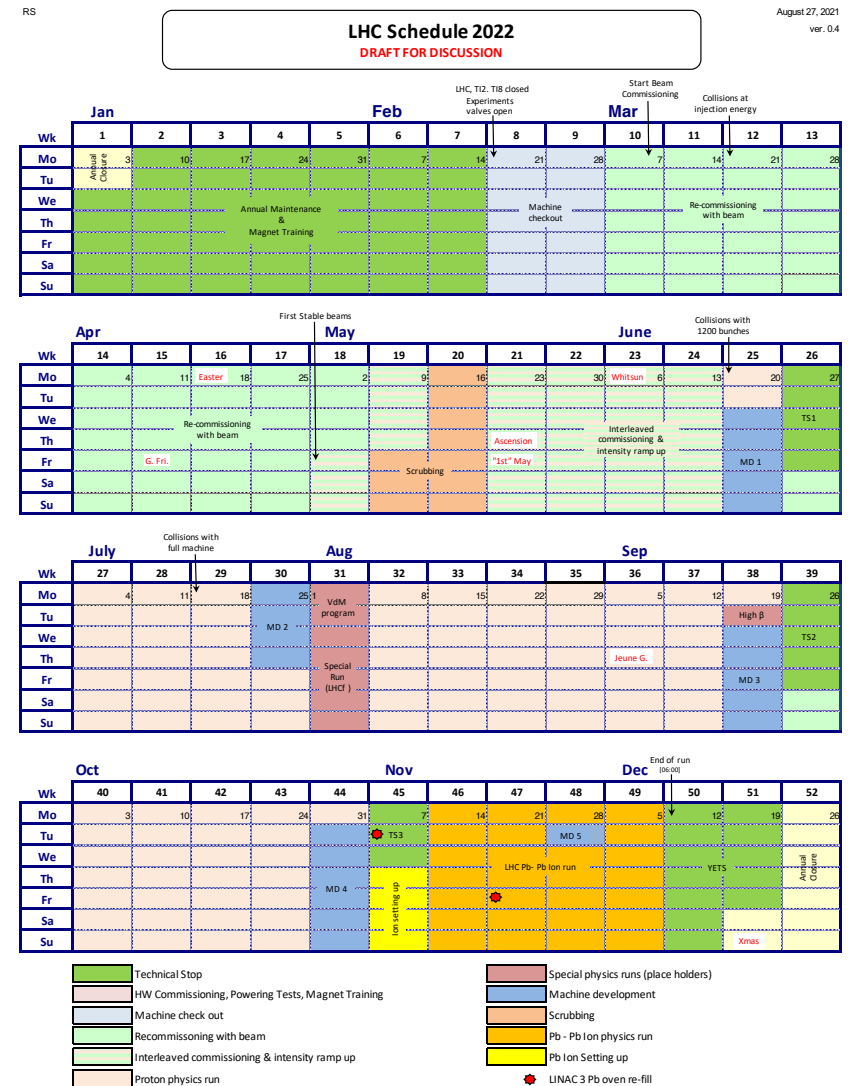
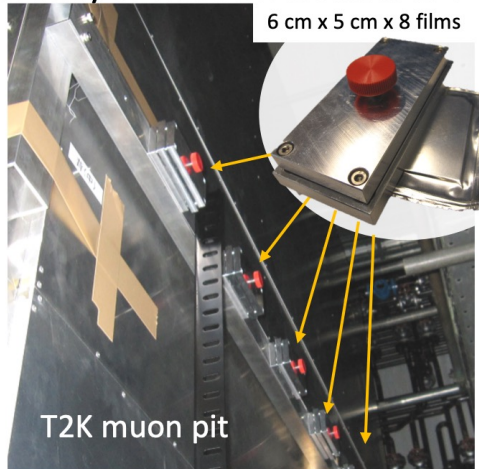


# Plans in early 2022

- FASER will take data from the start of 2022
- Our plans for installation of the first FASERnu box not fully decided upon yet
- Plan to install a FASERnu box with a small amount of emulsion in, either before LHC closed (mid-Feb) or during an access in beam commissioning March/April
- Will also likely install some small emulsion packets to map out the muon flux in a wider area in TI12 (input for FPF)
- Plan for first installation of full FASERnu box in TS1 or in an access before then if possible



an array of emulsion modules in T2K





# Backup...





## Dark Room facility: Common FASERnu/SND/DsTau/SHiP request

- **Underground space identified for storing one detector while the other is constructed/developed in dark room**
  - Space is a short distance into AWAKE access gallery (PGCN81 in TAG41), accessible from SPS ECN4;
  - Seems to satisfy the requirements (depth, activation, accessibility);
    - Limited access for ~3 weeks a year during AWAKE operations → need to check that it does not fall around any LHC technical stop;
  - Although area satisfies requirements, continue to look for more convenient storage (e.g.P1 HL-LHC area)
- Progress has been made on the dark room refurbishments:
  - The dark room has been cleared-out and obsolete equipment removed;
  - Foresee to merge together 2 small rooms to form a dedicated drying room, and knock a door directly from the dark room to this drying room. Works for this planned to take place soon;
  - Discussions with EN-CV on renovating the cold water and ventilation system have converged;
  - **In terms of funding for the refurbishment, EP management has agreed to contribute at a level which basically covers the renovation of the cooling and ventilation system and we are now discussing the details of the renovation of the rooms.**
- RB has asked for memo to explain need for renovation of cooling/ventilation, the proposed solution, and cost



Future room for assembly



Future room for development