

# Experimental Linac for Surface Analysis

Compact proton accelerator for Science Gateway

12<sup>th</sup> Joint Technical Meeting  
23 March 2023

## *Agenda*

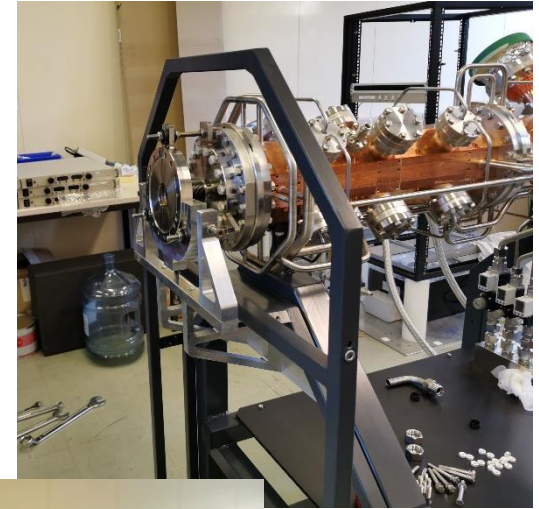
- Status of the project and next steps
- Planning for the installation at Science Gateway
- ELISA layout inside the mini tunnel
- ELISA barrier
- To do list ....

## *Last meetings*

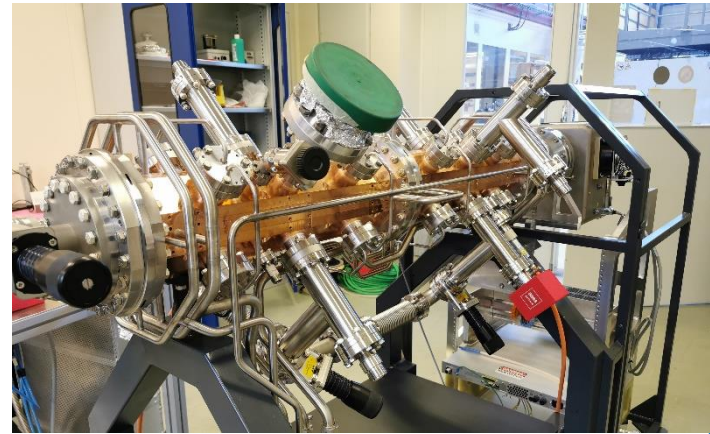
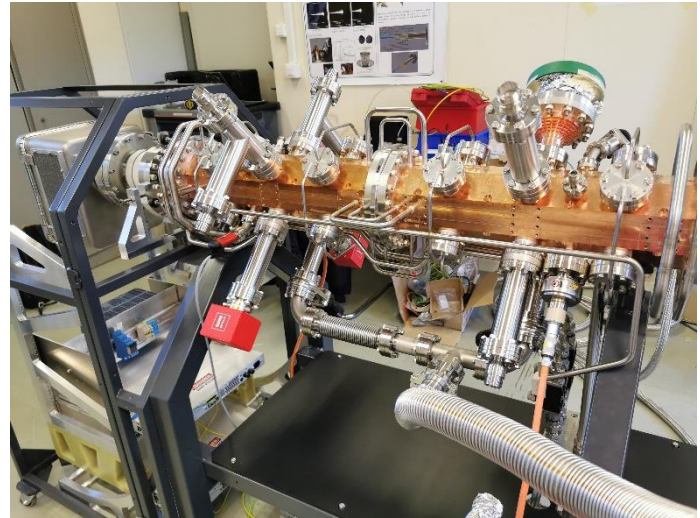
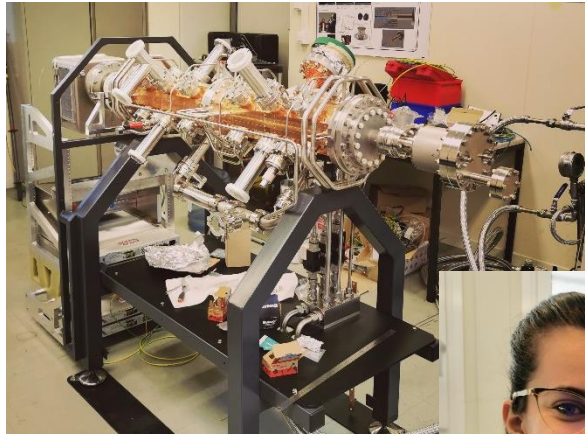
- 11<sup>th</sup> Tech. Meeting, 29Sep22:
  - RFQ tunned / Cooling RFQ study & construction
  - Source with new permanent magnets  
& nominal current
- 2<sup>th</sup> Safety workshop, 2 Dec22:
  - Barrier and safety systems

# 1 – Status - Accelerator

- The cooling circuit is done
- Source and LEBT are connected
- NEG pumps installed
- Source rack under assembly

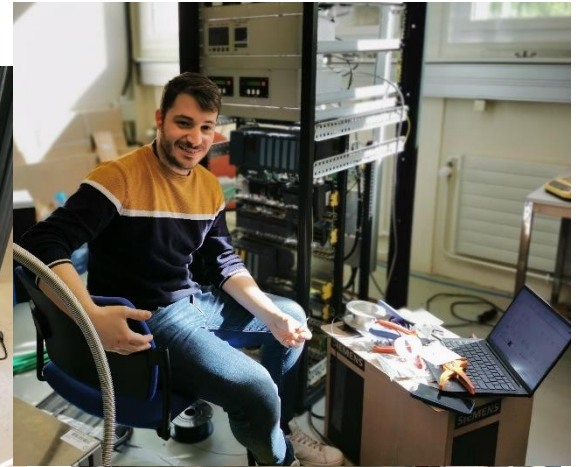


# 1 – Status - Accelerator

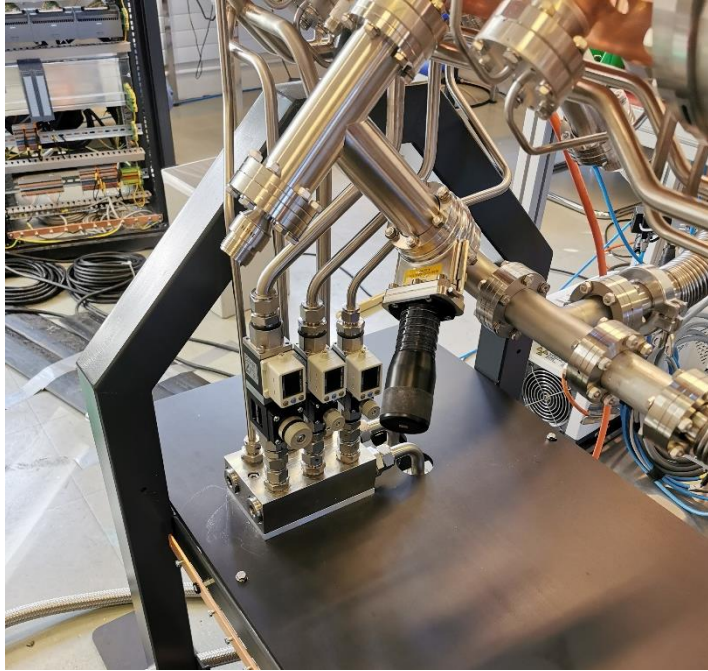




# 1 – Status - Control



# 1 – Status - Chiller



# *1 – Next Steps*

## To do asap

- > Proton Source :
  - Finish the installation of the HV rack.
  - Modification of the oscillator power supply (add cooling).
  - Modification/installation of the H2 gas line.
- > Vacuum :
  - Activation of the NEG pumps.
  - Tests of the vacuum system: Ultimate vacuum, vacuum versus H2 flow rate, regeneration frequency, ...
- > 20 keV beam tests: - Run/alignment of the source for optimum 20 keV beam at the RFQ high energy side.
- > Beam window: - Tests with the 500 nm beam window.

## To be done building 112

## In parallel:

- > Chiller:
  - Run tests with the chiller.
  - Calibration of the flowmeters and tests with the control system.
- > Source cage:
  - Check for RF protection panels.
  - Order interlock SIL2.
- > Control:
  - Continue the procedures.
  - Safety interlocks.
  - Continue the cabling



## 2 – Planning

--> 1° Last news: The RF amplifier could be delivered at CERN in May or June

- ⇒ - Beam tests building 112 (with another RF source) is no longer a option
- ⇒ - We move *as soon as we can* ELISA at SGW (during May or June?)
- ⇒ - RF amplifier commissioning, RFQ conditioning, Beam tests will be done at SGW (June to September)
- ⇒ - Ready with beam in October!?



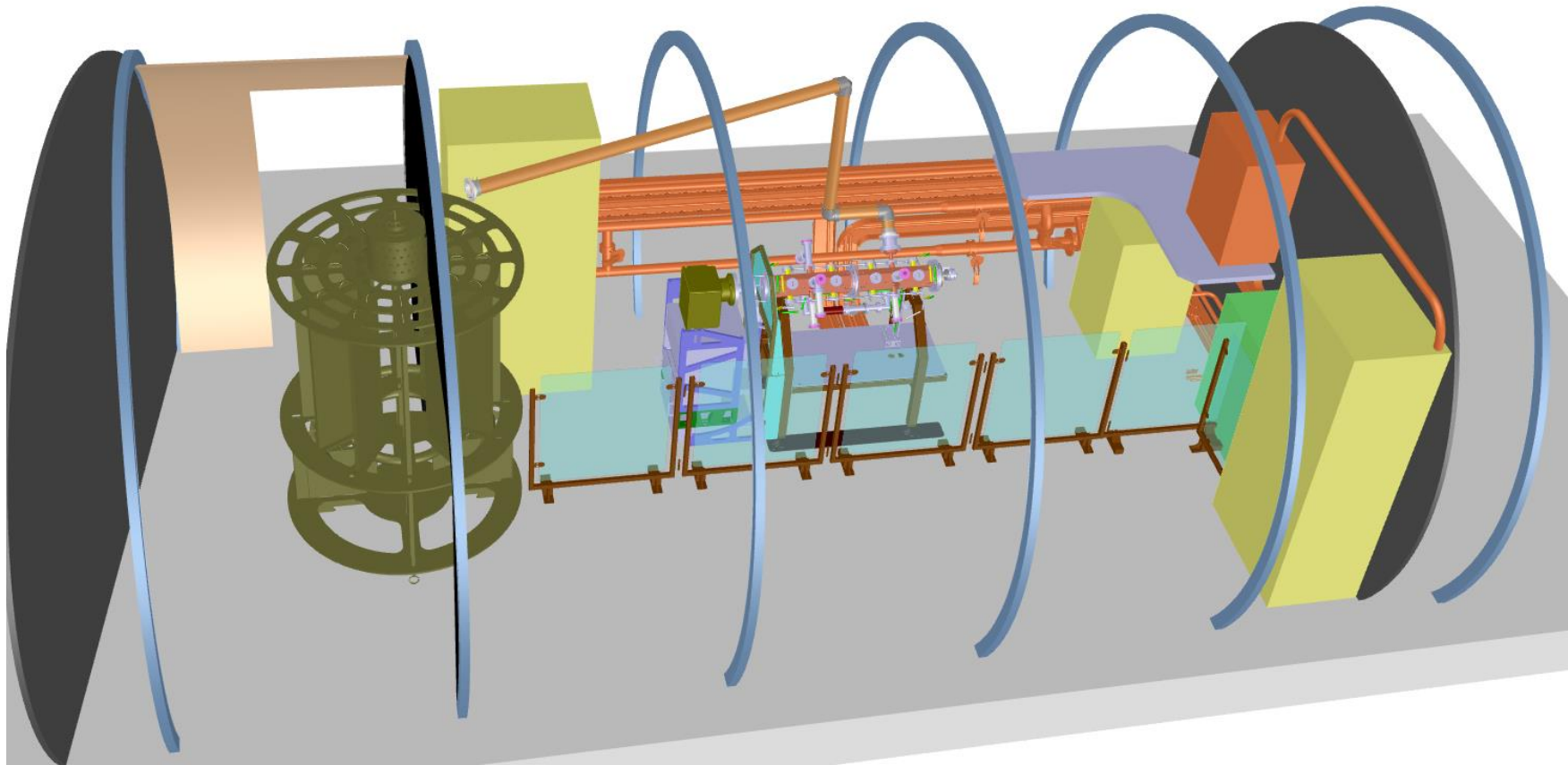
--> 2° Last news: The mini tunnel almost ready!

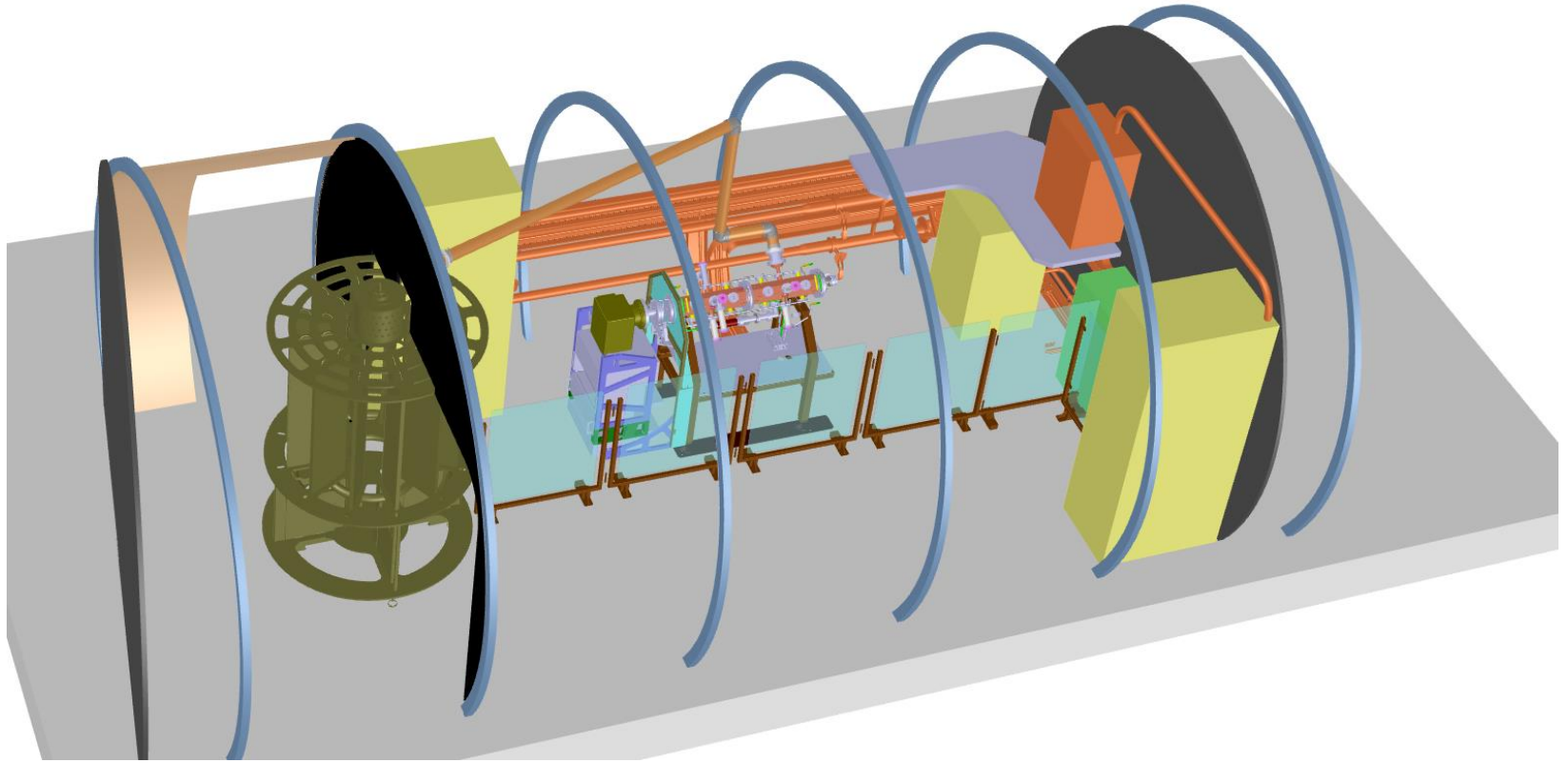
- ⇒ - Cooling pipes installation for Easter
- ⇒ - Electrical cabinet + main electrical line to be done in April

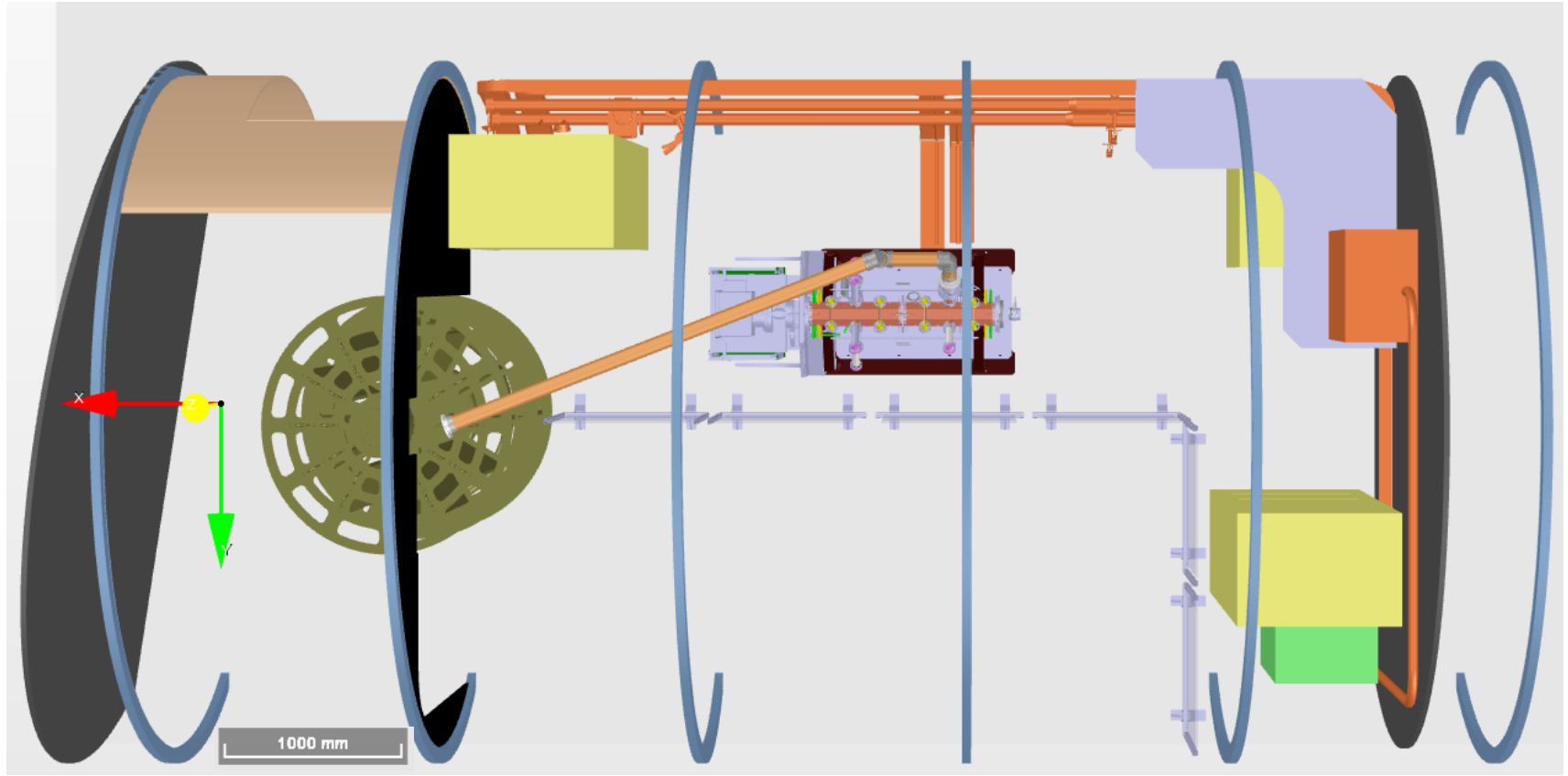




### 3 – ELISA layout inside the mini tunnel





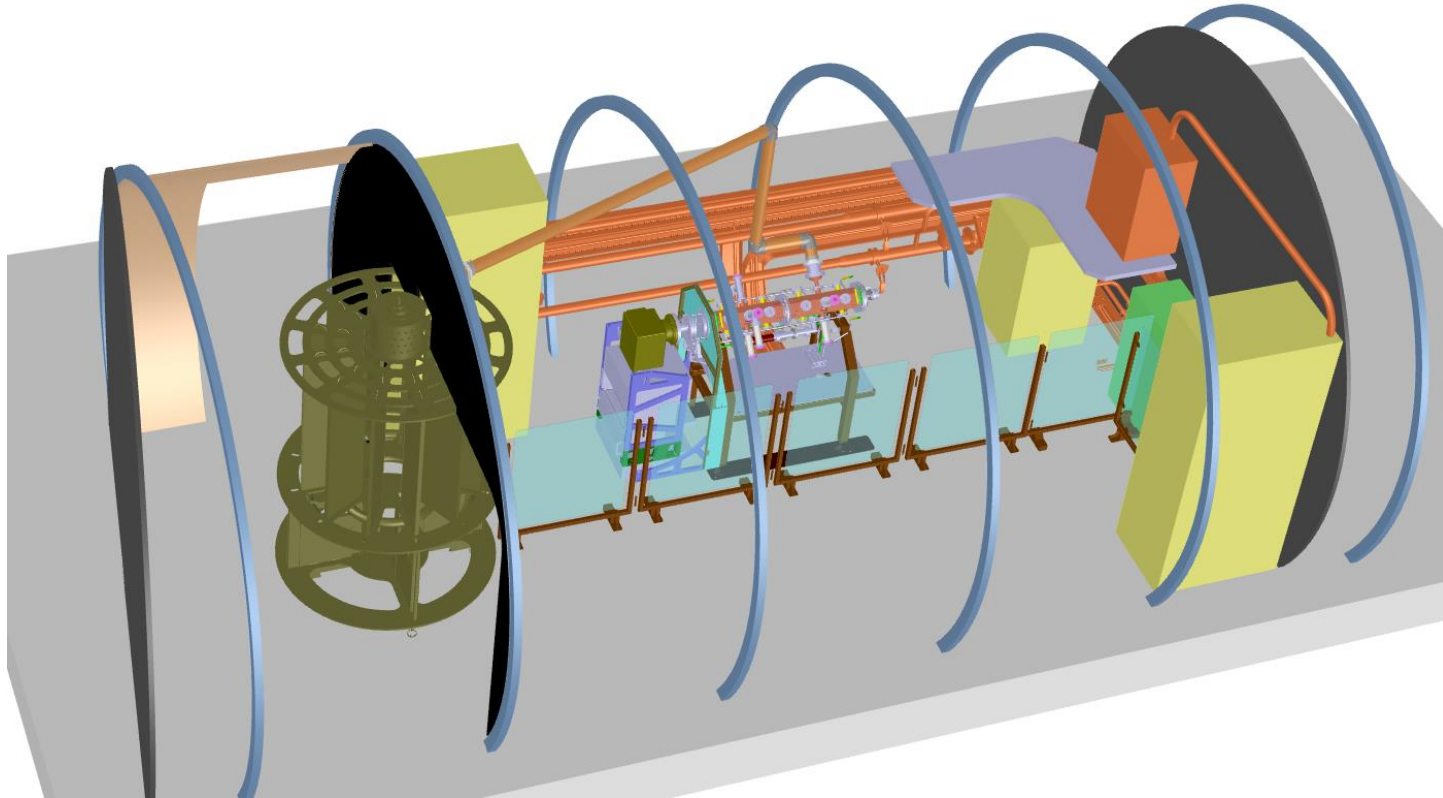




## 4 – ELISA Barrier

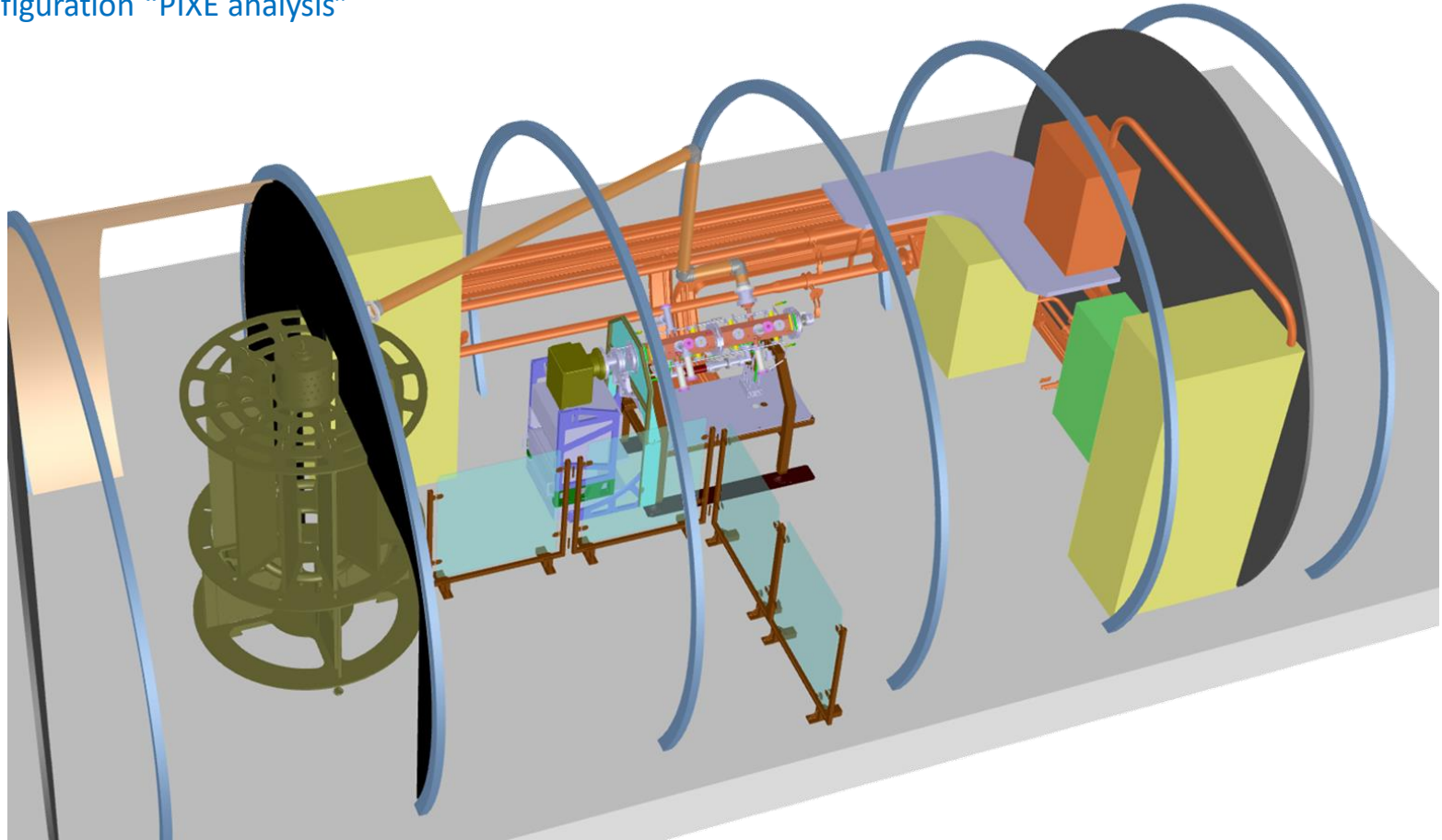
- > Inputs:
- Constraint of 3 kN/m\* seems difficult/not feasible. (\*Réglementation Suisse SIA 261 in case of rassemblement de personnes)
  - In addition:
    - ° We haven't immediate risk behind the barrier. (All elements are protected)
    - ° The LIDAR and Camera will alarm when there is no operator. Mechanical resistance of the barrier not helps.
    - ° Public will be limited to 10-15 people.
  - > The barrier must be of a sufficient strength by being attached at the ends so as not to be a risk to the public!
  - The barrier must be removable and easily transformable (2 possible configurations)

--> Configuration "Public demonstrations & Stand alone"



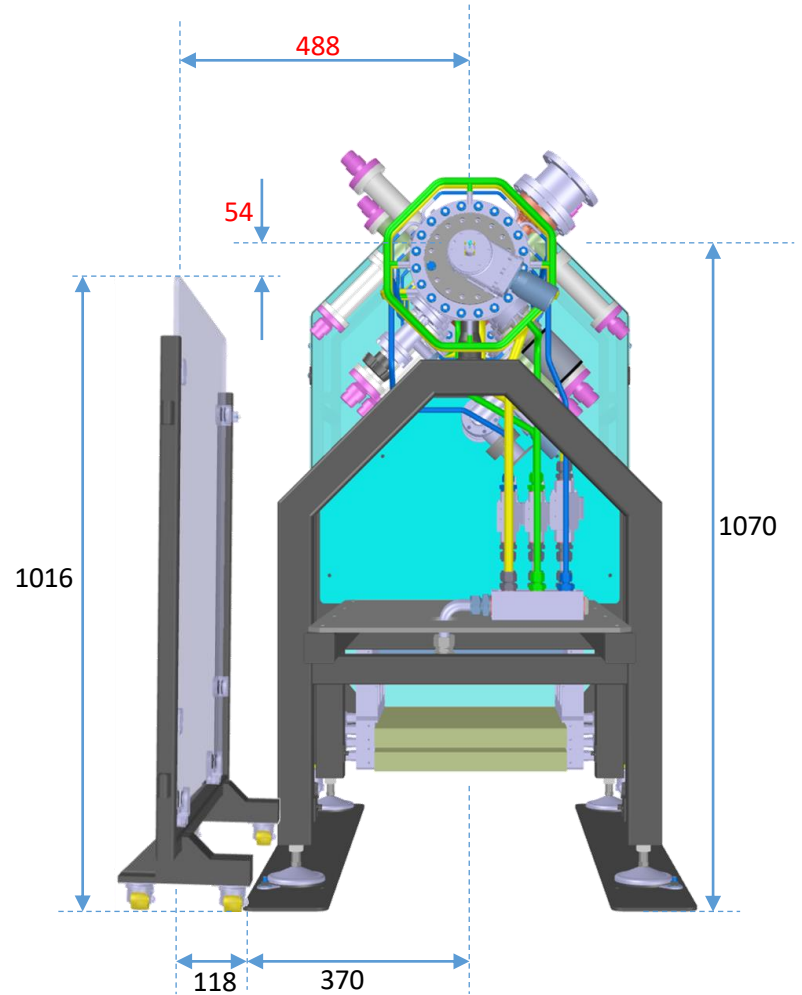
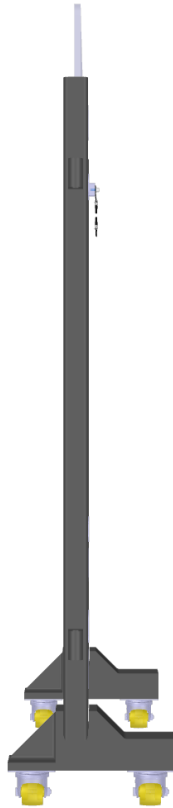
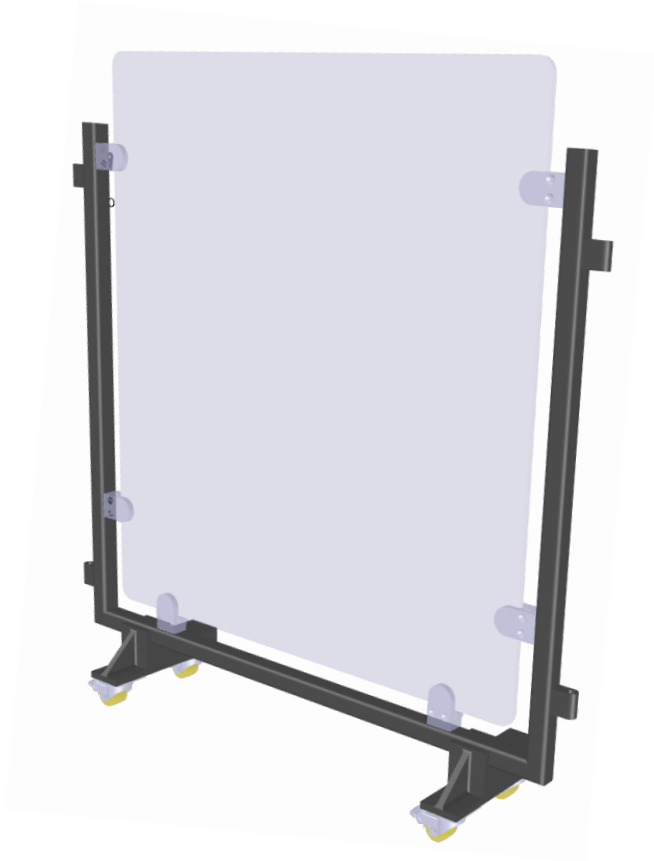
Design: Callum Tetrault, Marc Timmins (EN/MME)

--> Configuration "PIXE analysis"



Design: Callum Tetrault, Marc Timmins (EN/MME)





## 5 – *ELISA To do list ....*