

LNGS activities

PTOLEMY meeting, Zandvoort, Amsterdam, The Netherlands 6-7 of October 2022

The group

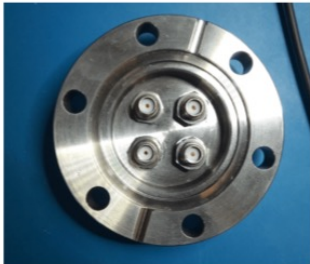
- AG Cocco: LNGS researcher (local INFN-responsible of the PTOLEMY activities)
- N D'Ambrosio: LNGS research (head of the Electronic workshop)
- AD Ferella: AP at University of L'Aquila
- M. Messina: LNGS researcher (National INFN-responsible of the PTOLEMY project)
- N. Rossi: LNGS researcher
- F. Virzi: PhD student starting on November the 1st
- D. Orlandi: LNGS technologist (head of eng. design service and mechanical workshop)
- D. Cortis: LNGS technologist of the eng. design service

RF facility

F. Virzi coordinate the activities

Cryogenic system

- Two GM cold heads
- LNA mounted on copper support
- $T_{LNA} \simeq 25K$
- I/O with RF flange

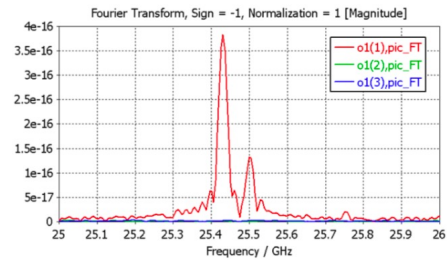


Electron-trap

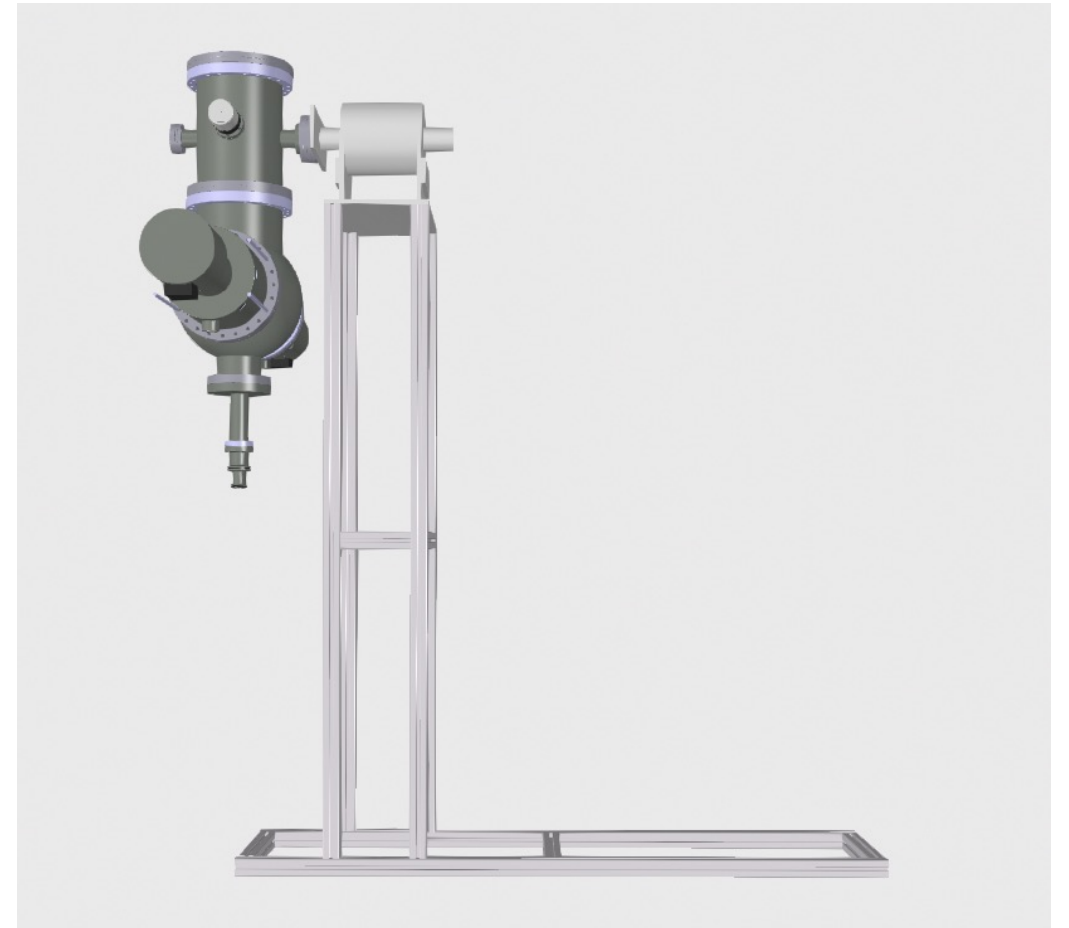
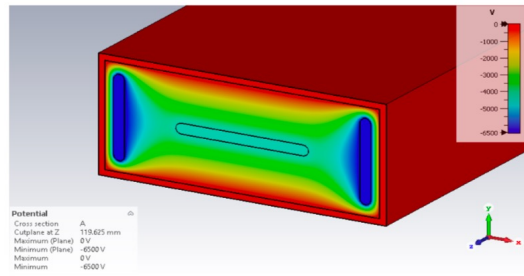
next step of Federico master

Electron trap

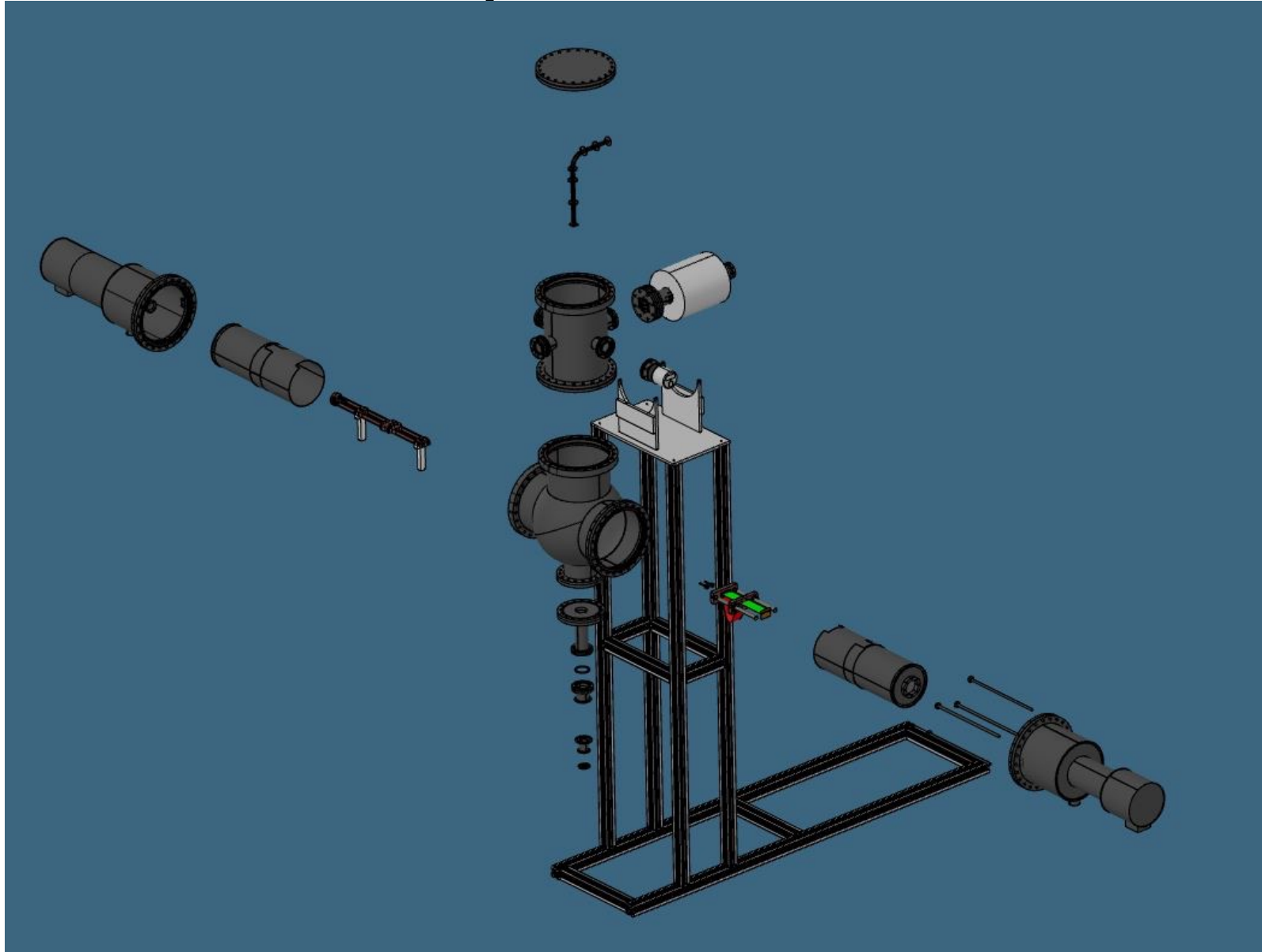
- Signal from physical electron
- Study and test of RF detection with Doppler effect



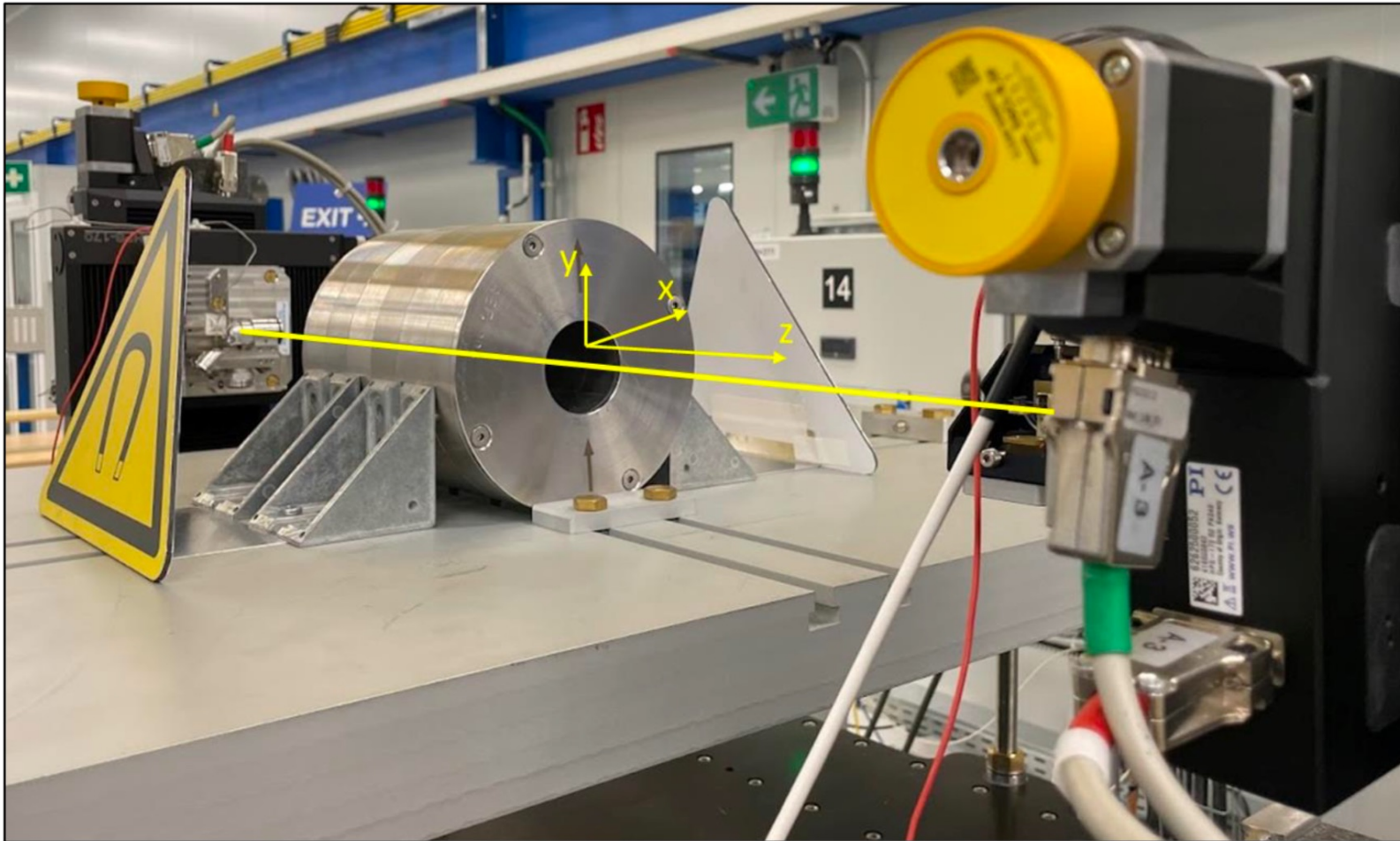
Ribbon Potential



Exploded views

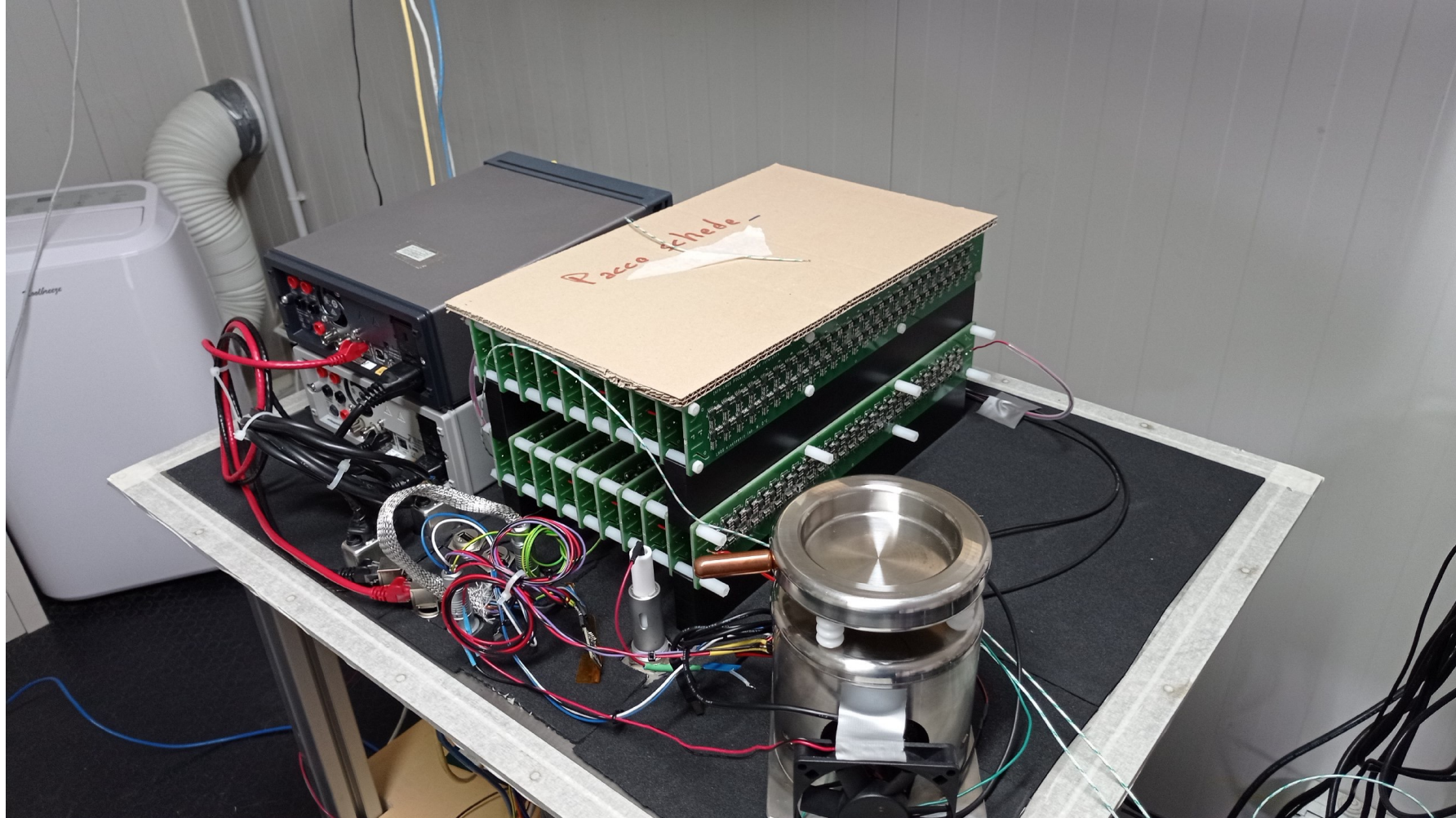


Permanent Magnet

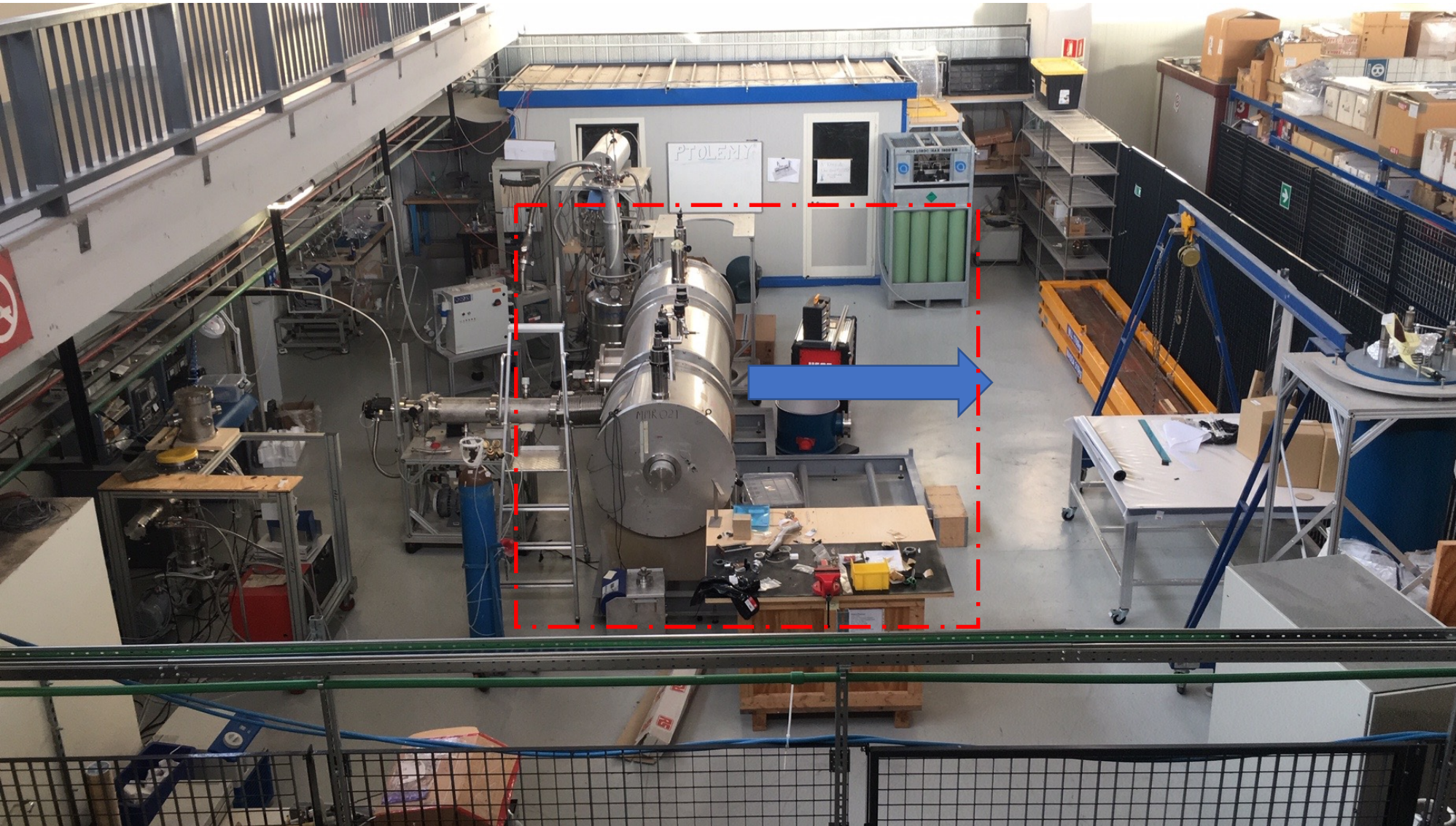


Permanent magnet on its way back to LNGS from CERN

Absolute energy scale definition



DEMONSTRATOR



Some cleaning and Space reorganization is needed. The demonstrator setup will be installed in the middle of the area.

Power line for 150 kW already budgeted and ready to be built once specs are defined.

Recent grant

- 300 kE of equipments out of which
 - i. ~70 kE for magnet power supply
 - ii. ~40 kE for magnet yoke
 - iii. ~30 kE for copper coils
- 100 kE for contracts
 - i. We will open a PhD position

How I see the demonstrator activities in phases

- Freezing designs
- Construction
- Running magnet (commissioning) and field map measurement with the support of CERN experts.
- Commissioning of the vacuum chamber and filter installation.
- First measurements with artificial sources. Let's try to measure the transfer function, with "standard electron detector".

Hic Sunt Leones

- Ready to go with TES?
- Measurement of T-graphene spectrum?

All these activities requires a strong group of people staying at LNGS. The PI of the PTOLEMY project need to think carefully how to build this group with scientist form INFN, NIKHEF/AmsterdamUni, Princeton, others??

Outlooks

- WE have several R&D activities which will be carried on by local scientists.
- We will host the PTOLEMY demonstrator. This will start a new epoch for the PTOLEMY project.
- The demonstrator is by itself a small scale experiment being the result of many parts based on different expertise from different groups. We expect to see people getting familiar with LNGS soon and we will provide all necessary support to make their stay a fruitful one.