

Mechanical Workshop activities in 2018-2019 and near future

A. Blanco

On behalf of the MW staff

Mechanical workshop

Four engineers and one technician.

Replacement, currently under training



Nuno Filipe
Silva Dias
Coimbra



Rui Alves
Coimbra



Douglas
Lima
Coimbra



Jorge
Moreira



Carlos Silva
Coimbra

Many services and know-how available.

- **Project and design.**
- Production

CNC and **conventional milling** and **lathing** machines.

Welding (Aluminum, inox, ...)

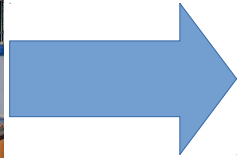
Other: guillotine, calender, chain saw, polishing machine, sanders ...

If you have a project with a mechanical component. Call us!!!
om-geral@coimbra.lip.pt



Mechanical Workshop (MW) 2018-2019.

- **Full time allocation** of the available manpower.
- **Final reallocation of the MW facilities** to the former Physics Department MW.



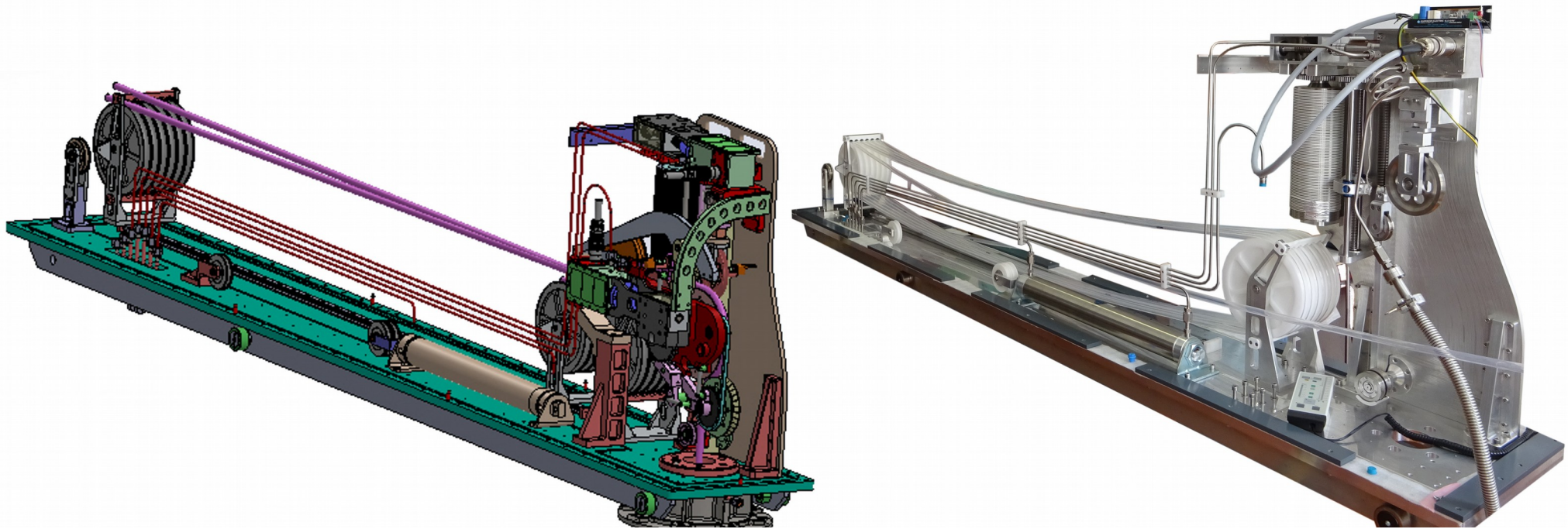
- Replacement of lathe operator (Douglas Lima) in progress.
- New large area CNC milling machine devoted to the construction of large area detectors.



Umbilical Retrieval Mechanism (URM) in the framework of **SNO+** activities.

2018-2019

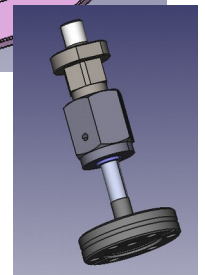
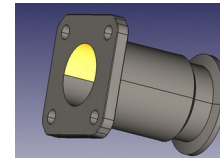
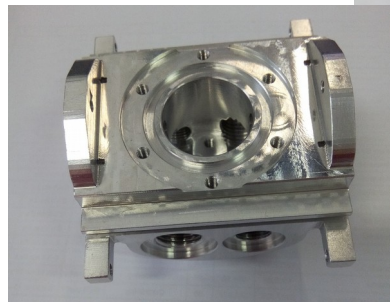
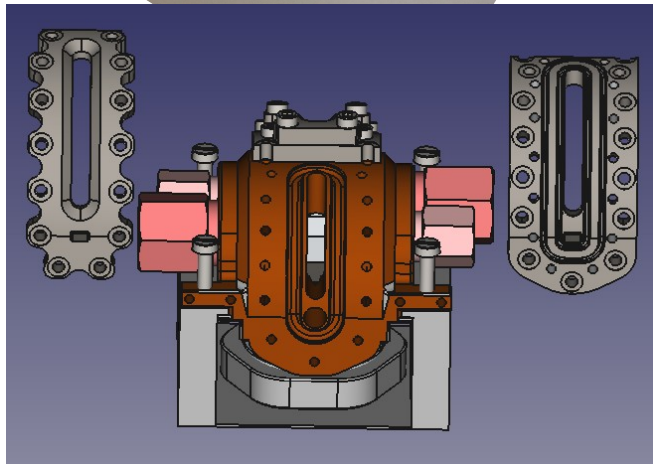
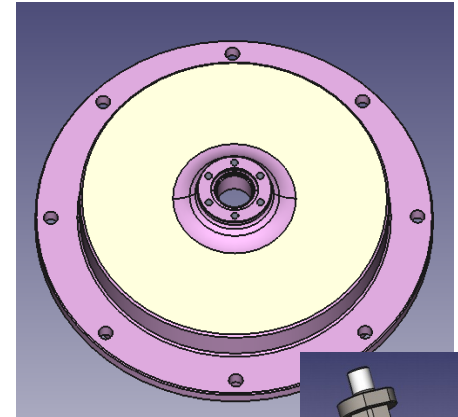
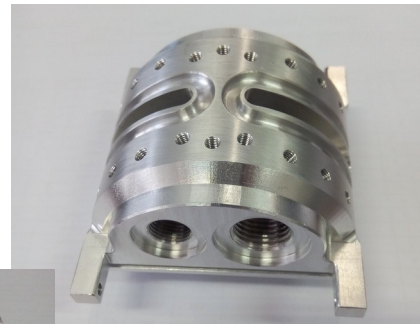
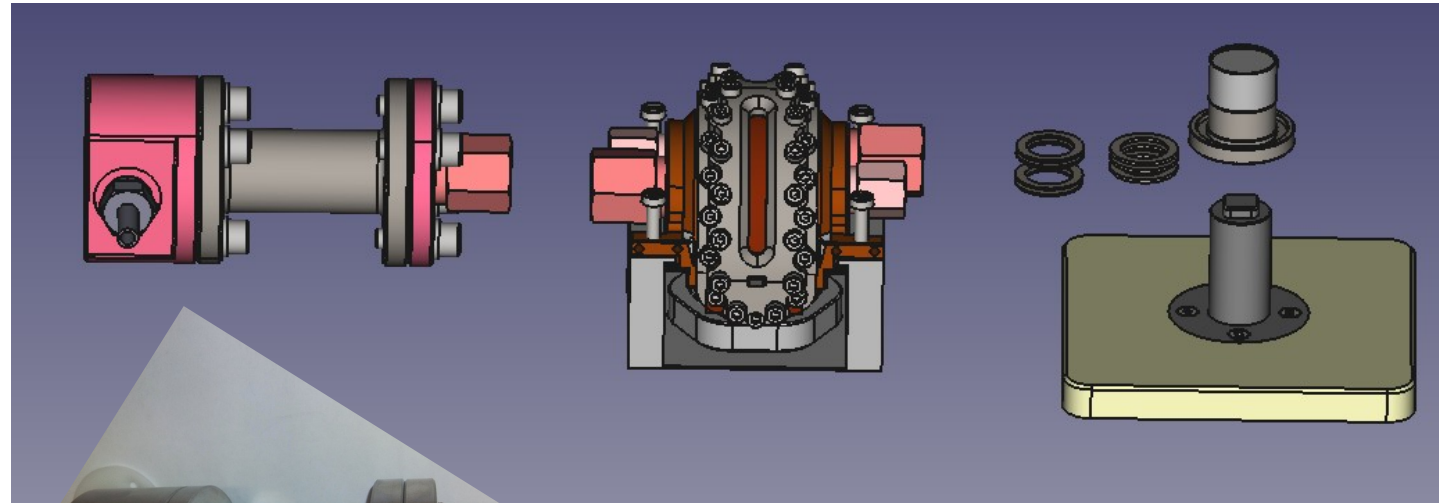
Construction, assembling and test of the second **Umbilical Retrieval Mechanism** (URM) (mechanics for the PMT calibration system) for the **SNO+** experiment



- Design
- Construction: milling, lathing, welding
- Assembling
- Test (together with DL).

Construction of a test chamber, pieces for gas systems and several small pieces of general purpose for **Physics Department**.

2018



Chamber for sample testing

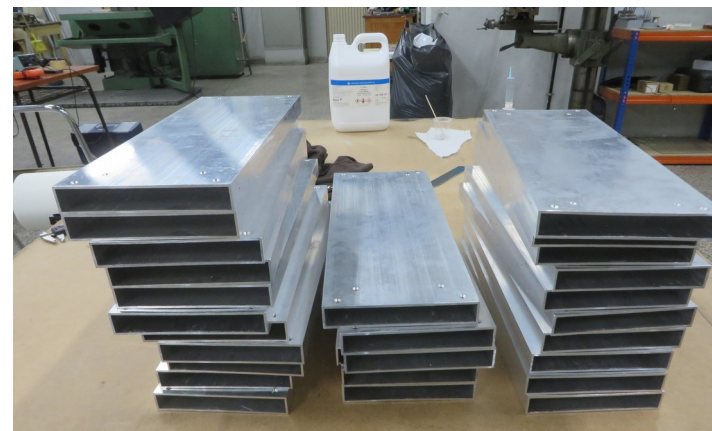
Falange and gas accessories

Construction of pieces for the RPC detectors for the LIP-Auger group in the frame work of the project "A new generation of RPC muon detectors for high-precision high-energy cosmic-shower". **MARTA**

2018



More than 10k units of tiny and precise PMMA pieces



More than 50 HV PS boxes



> 150 units



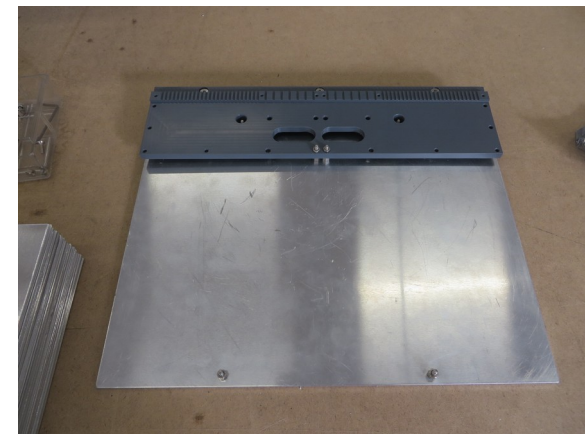
> 300 units



> 300 units



More than 100 gas connectors

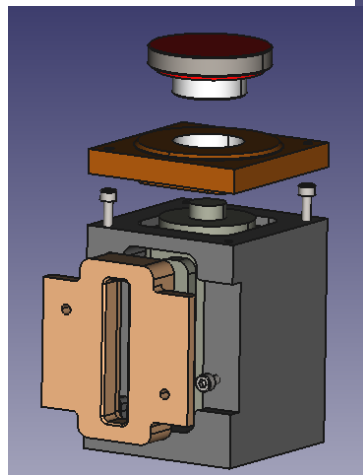


More than 50 DAQ supports

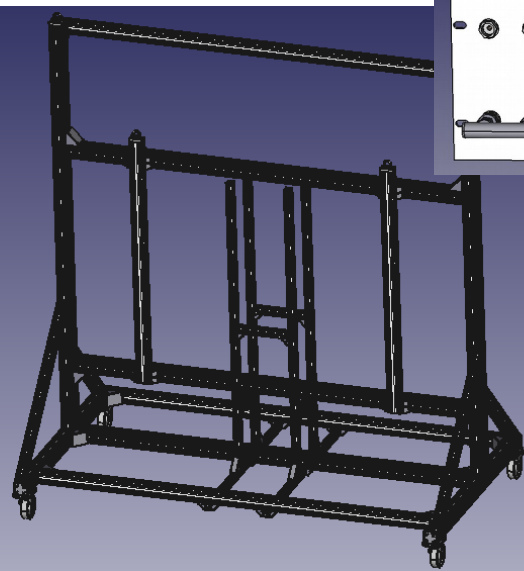
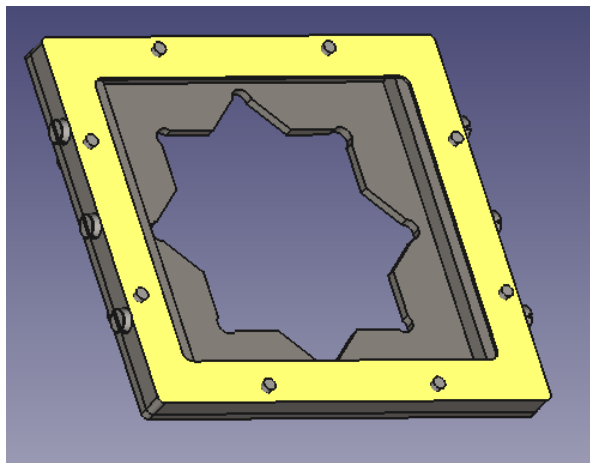
50 complex acrylic bubblers,
With small pieces and 5 axis milling

LIP-Auger, LIP-LZ, detector Lab (DL), RPC Preclinical-PET, LATTES, Gamma Cameras, SHiP, Gaseous Detectors R&D, HADES, RPC R&D (Antarctic), AHEAD, ATLAS, Portuguese Institute of Oncology (IPO), Chemistry Department (CD), Outreach, and other small works.

Radioactive source container

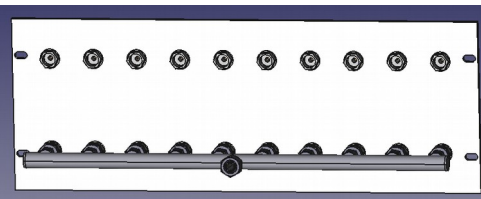
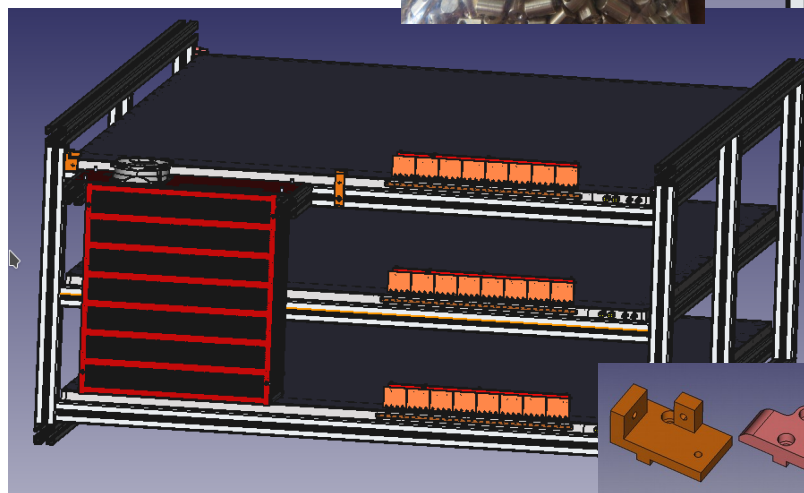


Colimator **Gamma Camera group**



ShiP prototype support

Tristan mechanics
RPC R&D



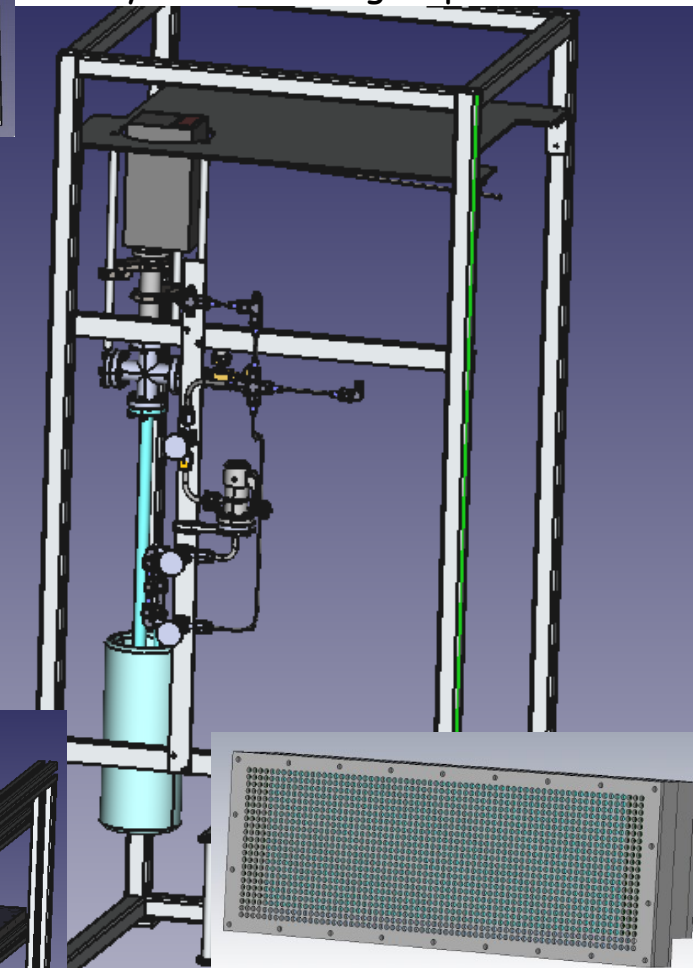
Gas system distribution

Thousands of FEE supports, automatically produced

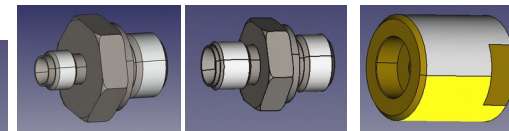


Gas system for **LZ** group

2018



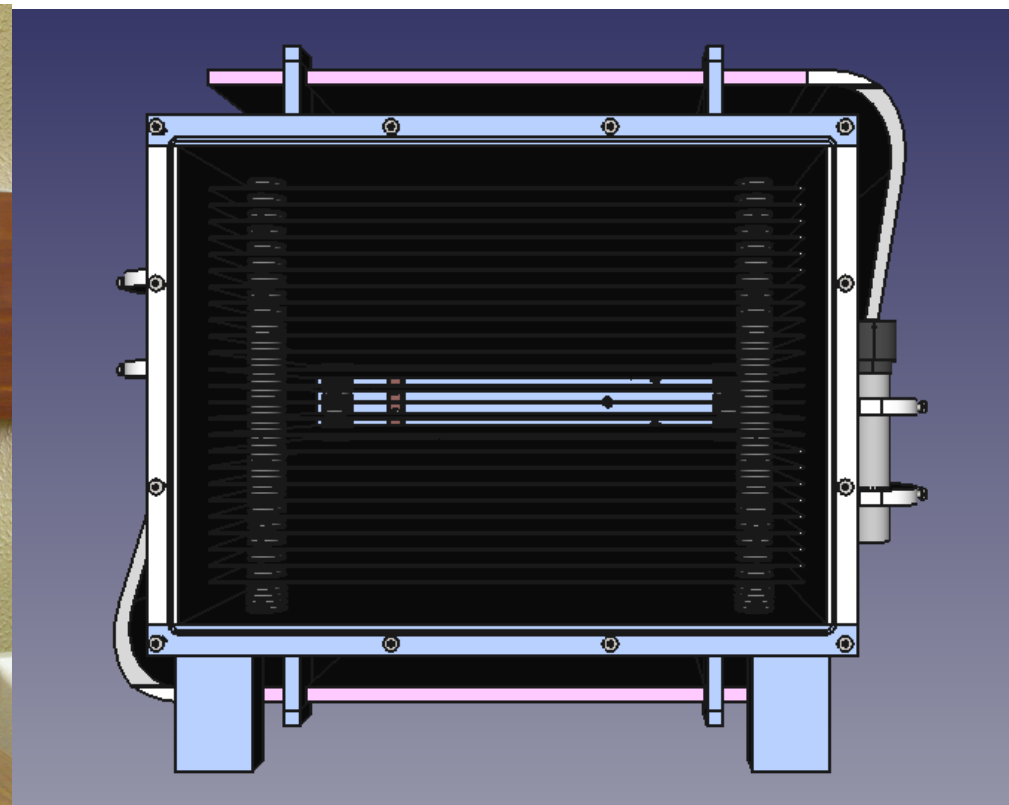
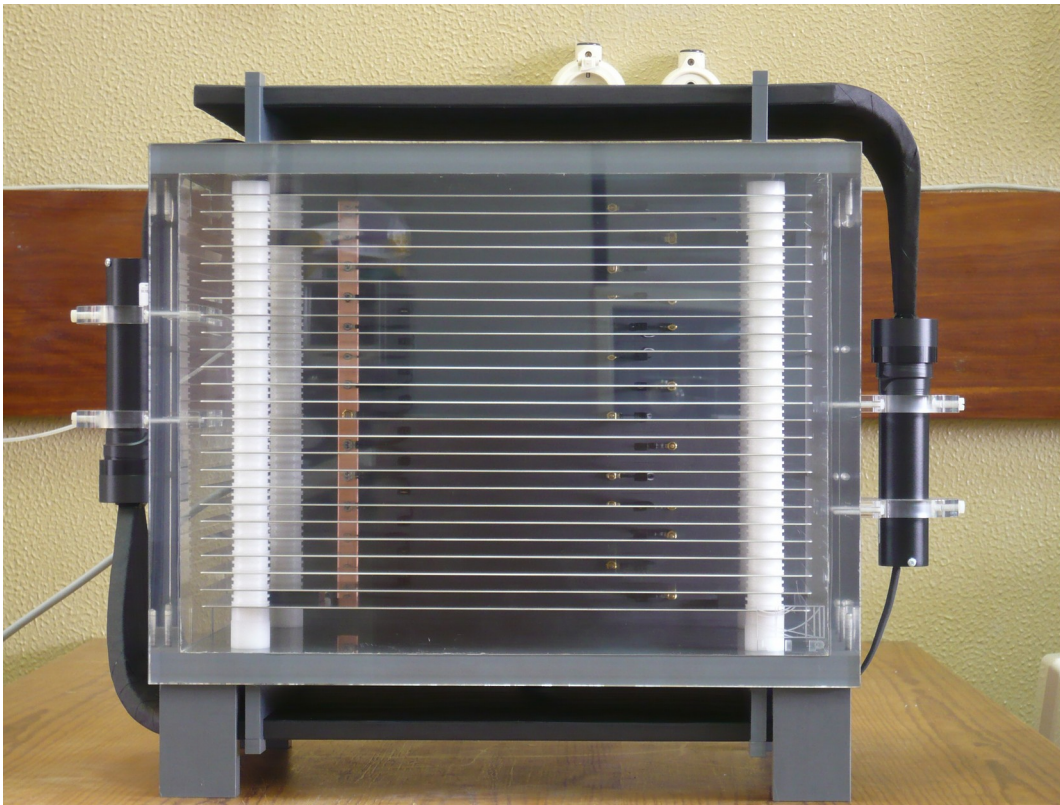
WaveGuide (**DEEC**)



Gas accessories **DL**

Construction of three spark chambers for the outreach project.

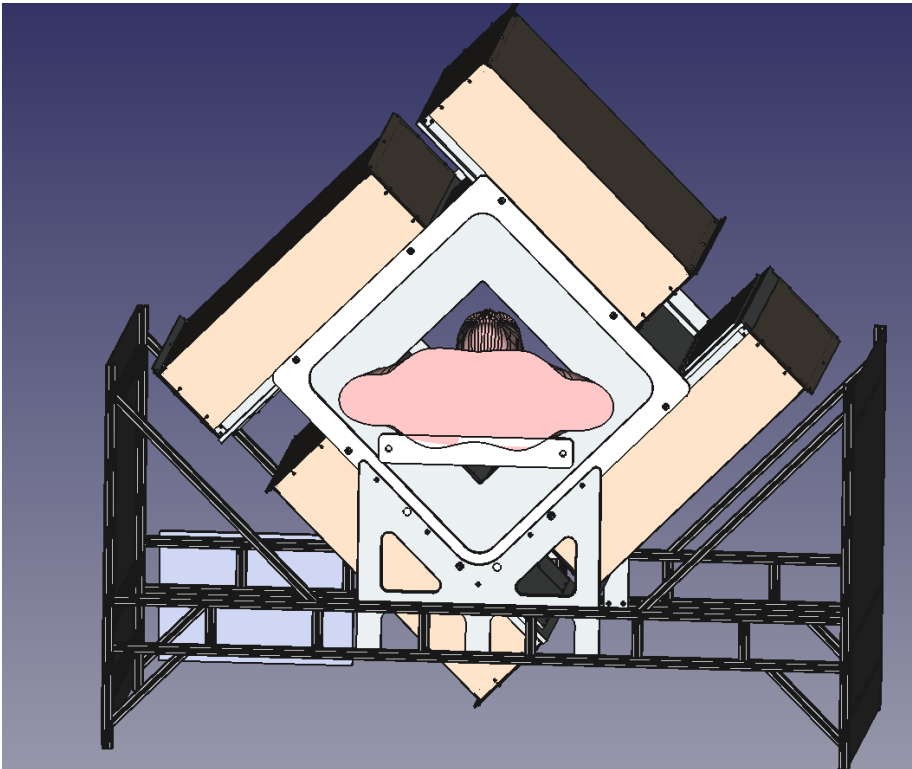
2019



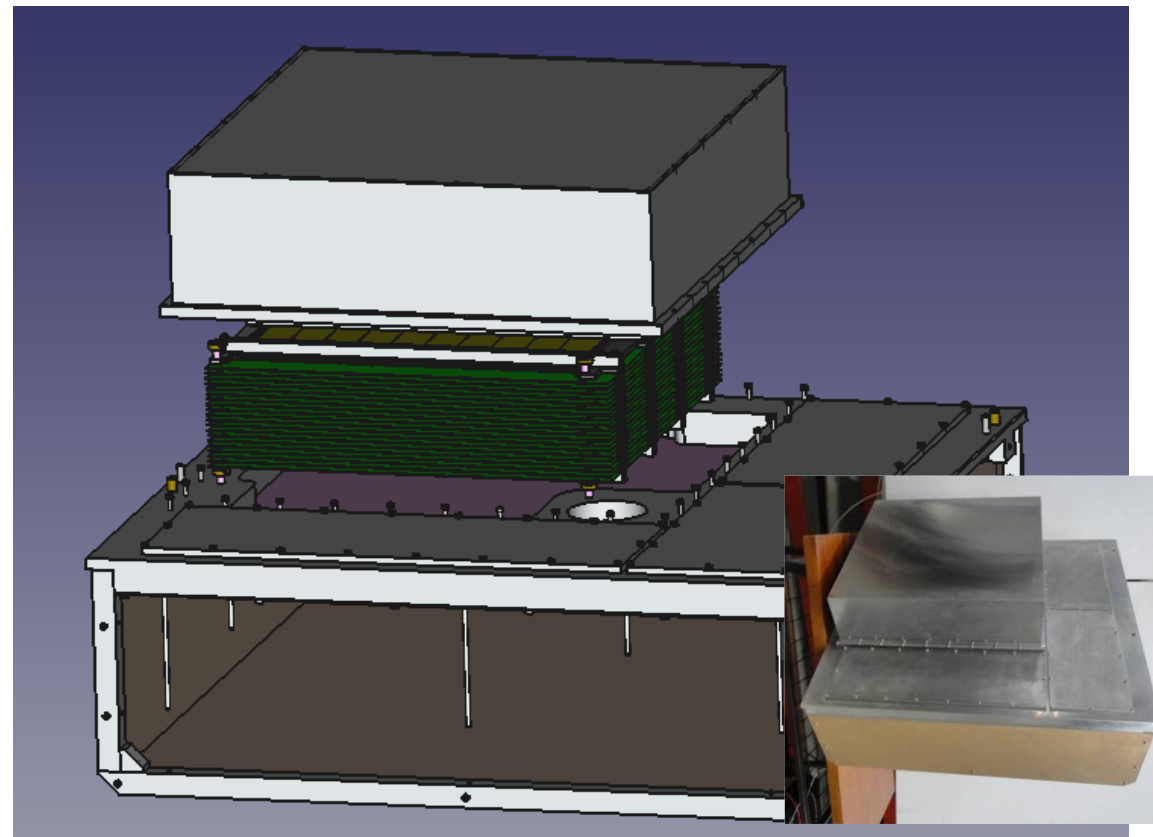
Three units produced in 2019

Mechanical project of HRezBrainPET and construction of first head

2019



Scanner full project



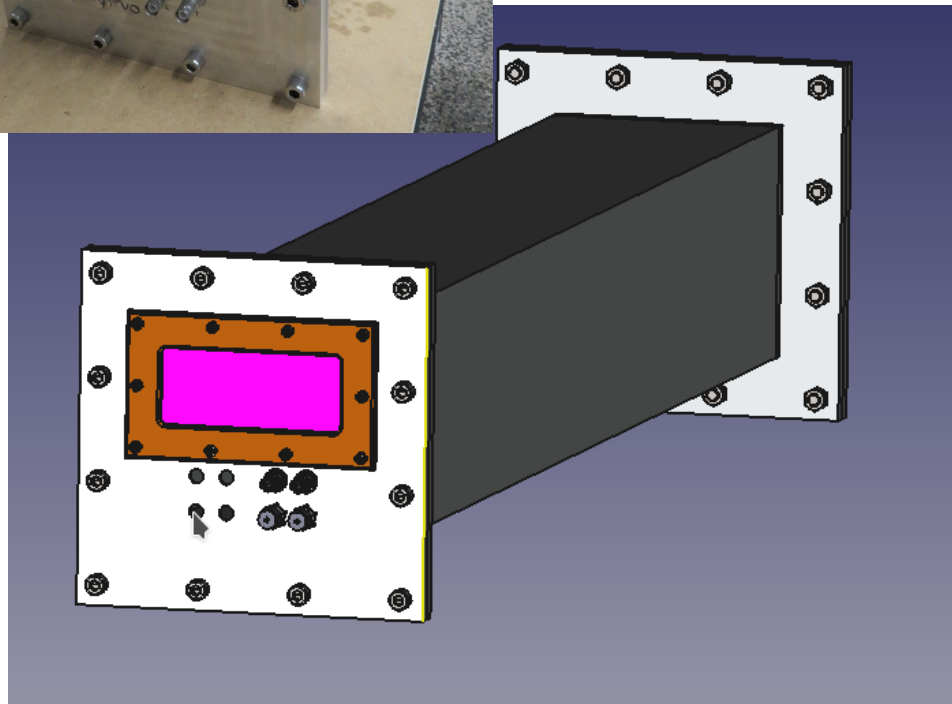
Mechanics of one head, already produced

Construction of new HADES Forward Detector prototype together with a gas box to be tested in beam.

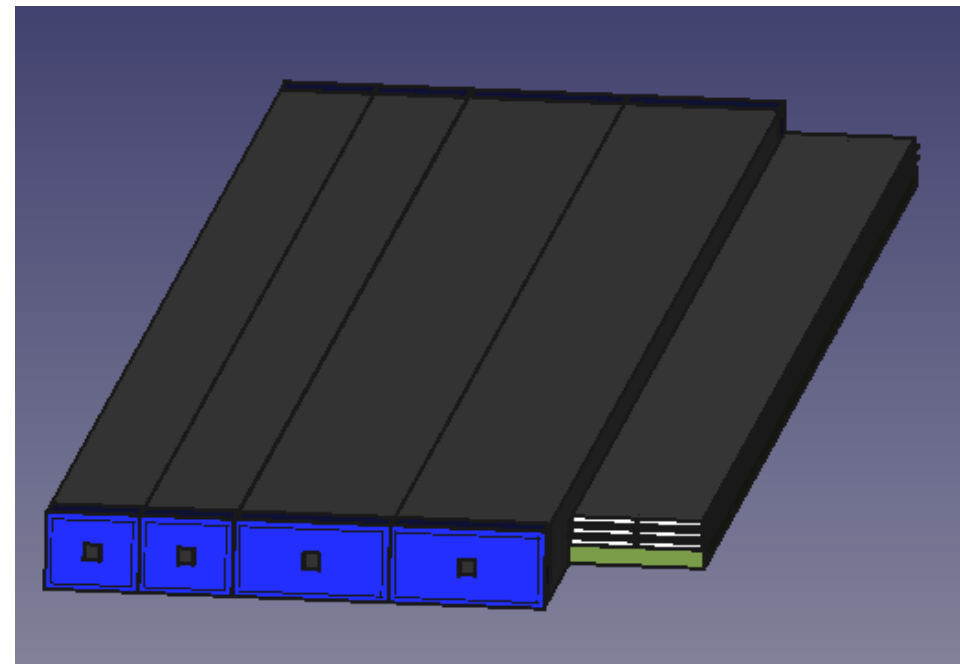
2019



Gas box for HADES-FD cells



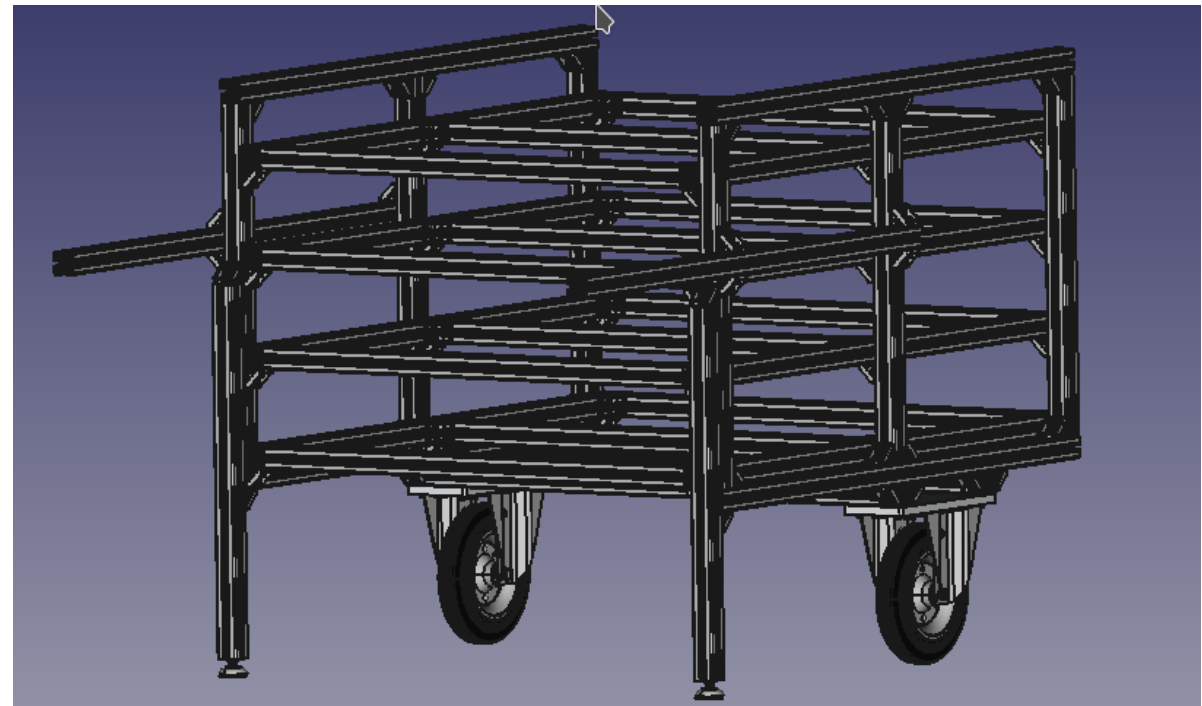
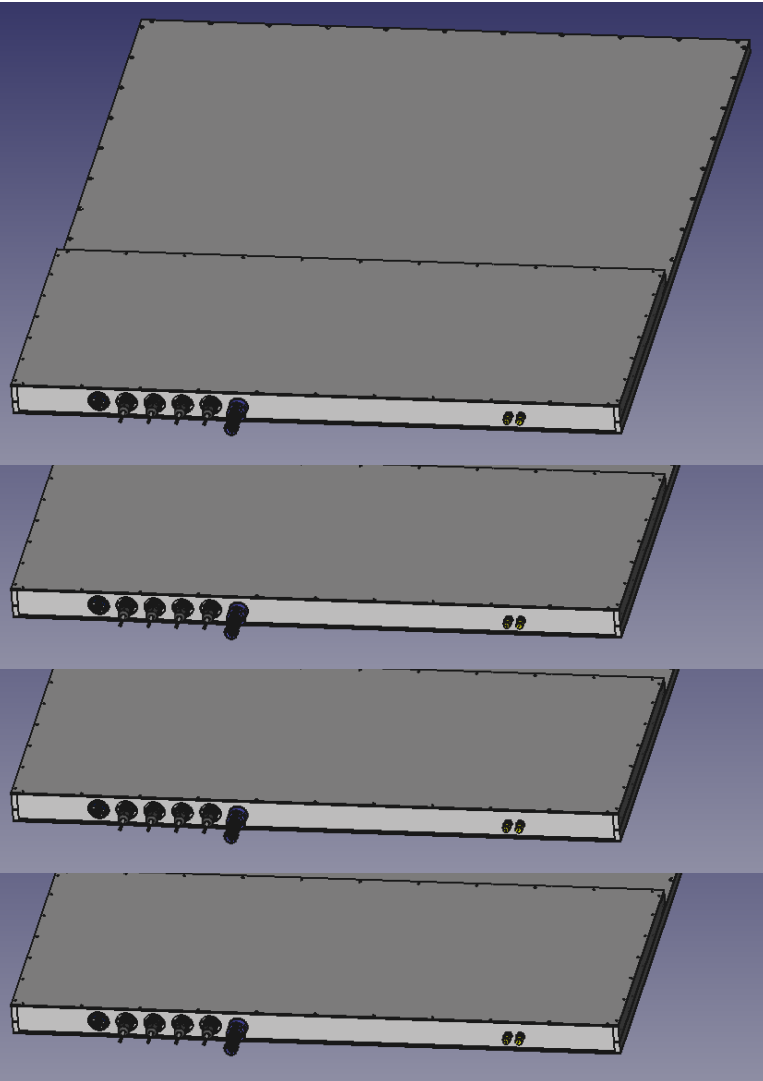
HADES-FD cells



Construction of mechanics for MUTOM tomography project.

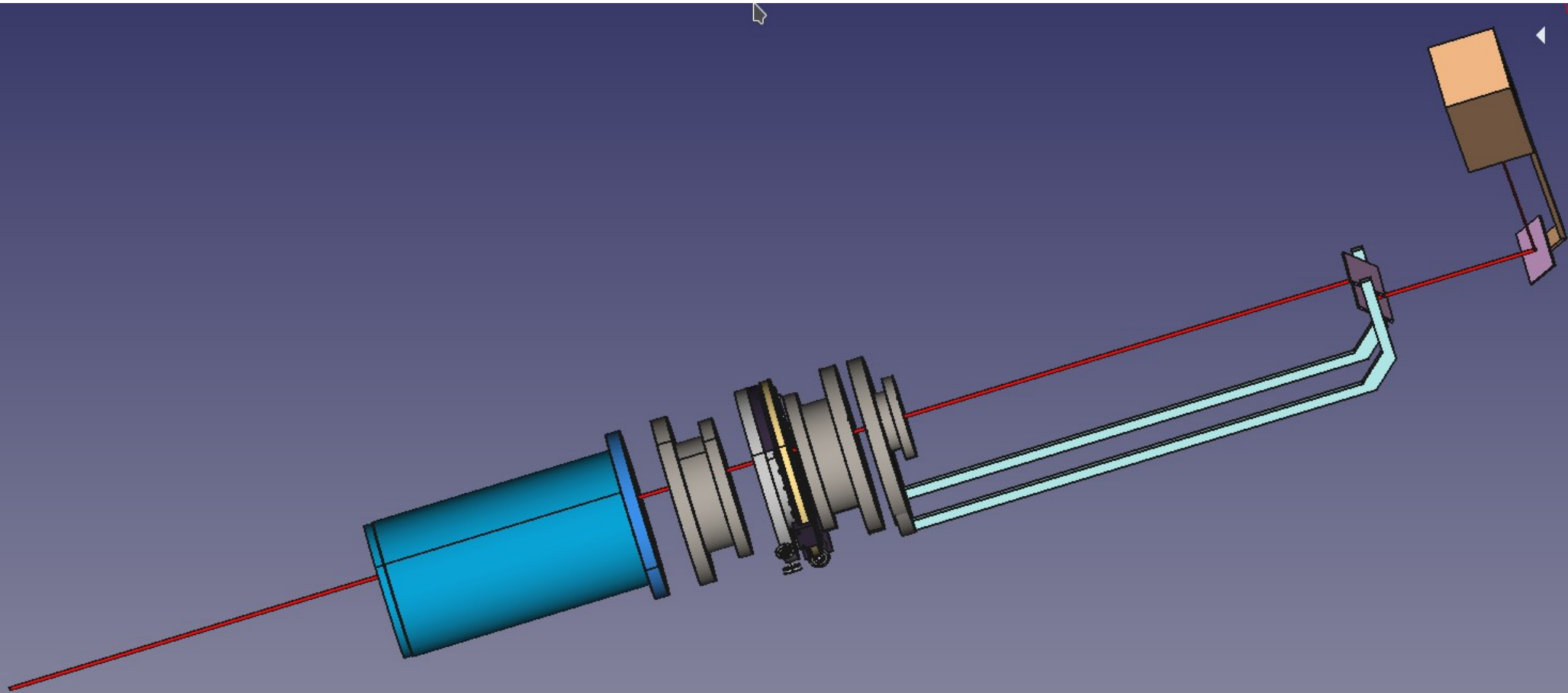
X4 MARTA-RPC like boxes

2019



Trolley for transportation and operation

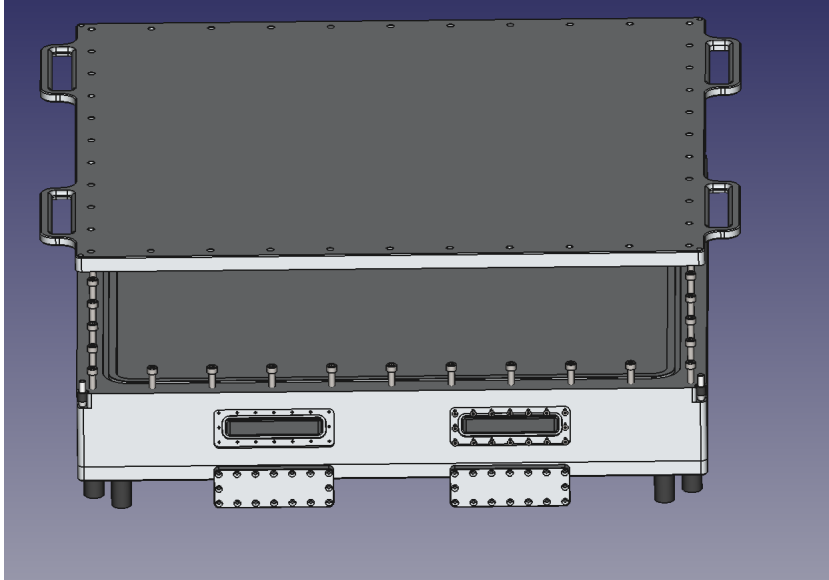
Design of mechanics for a laser calibration system for the protoDUNE TPC



Laser feedthrough with double rotatory system

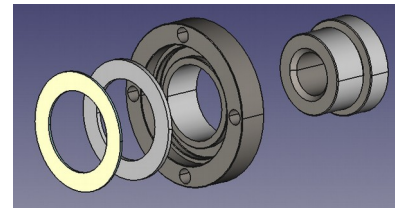
Hipobaric chamber (**LATTES**) for the development of RPC operated at high altitude.

2019

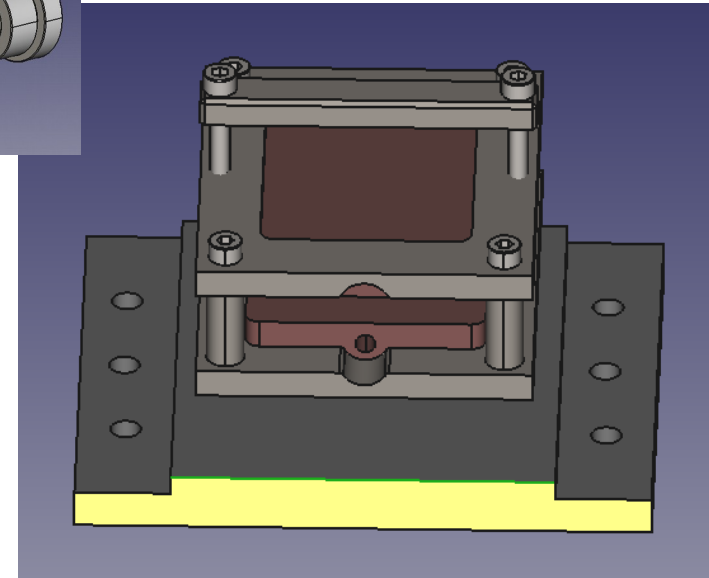


Dosimetry, RD51, Portuguese Institute of Oncology (IPO), Chemistry Department (CD), IPO, CMC-LIP, detector Lab (DL), Gaseous Detectors R&D, HADES, SHIP, Outreach, and other small works.

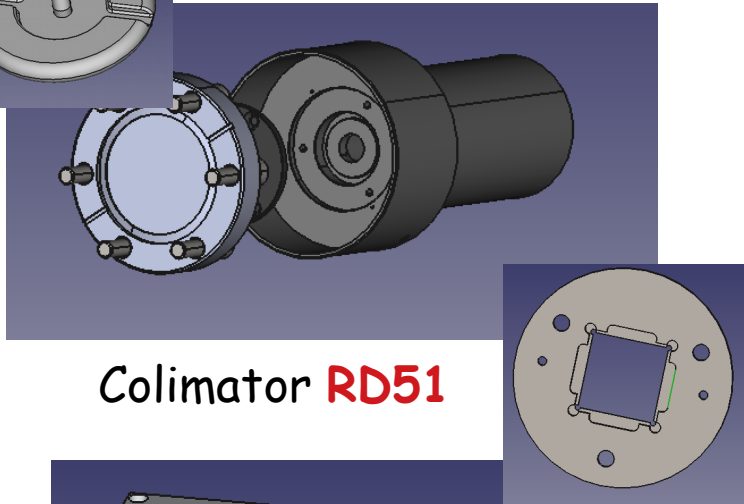
2019



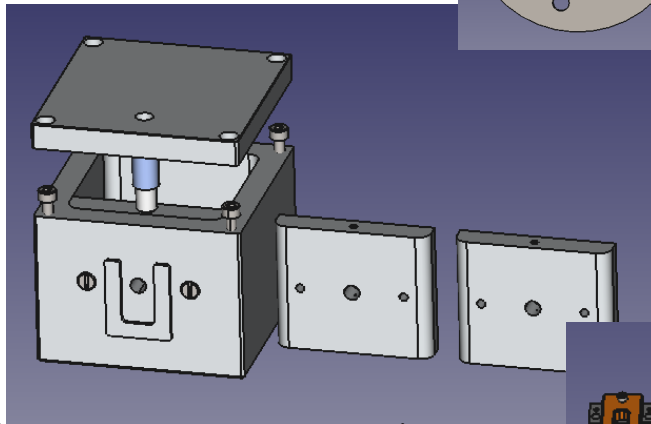
Collimator **CD**



Cell (**CD**)

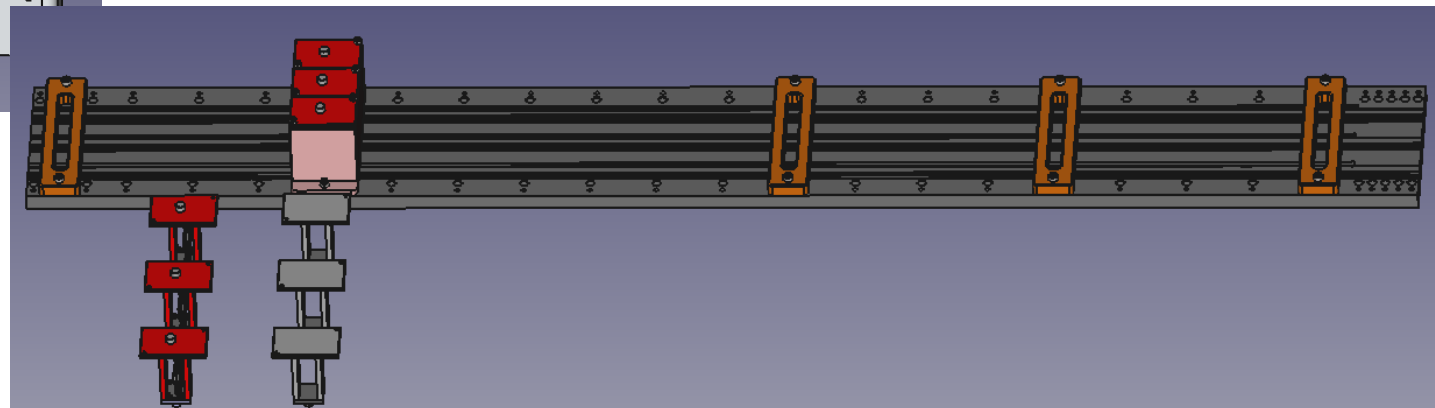


Collimator **RD51**



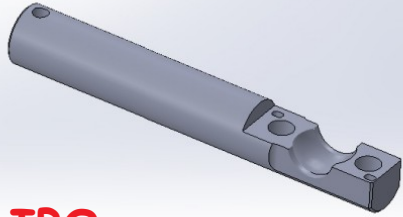
Fiber measurement box
Dosimetry

Fiber measurement workbench (Dosimetry)

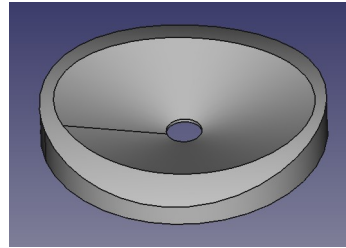


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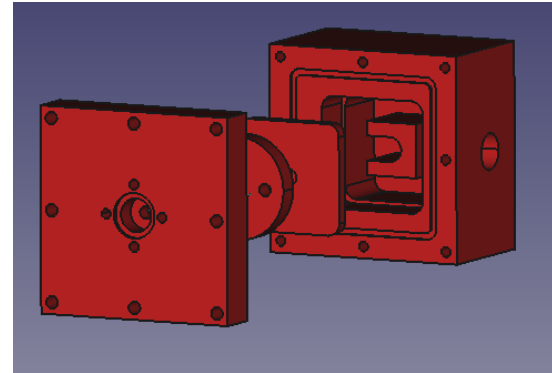
2019



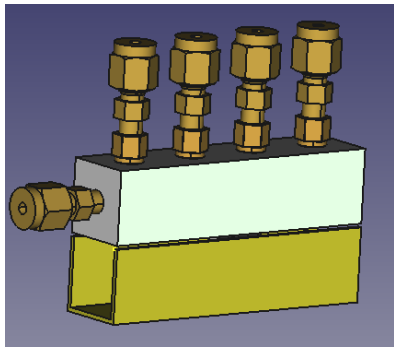
IPO



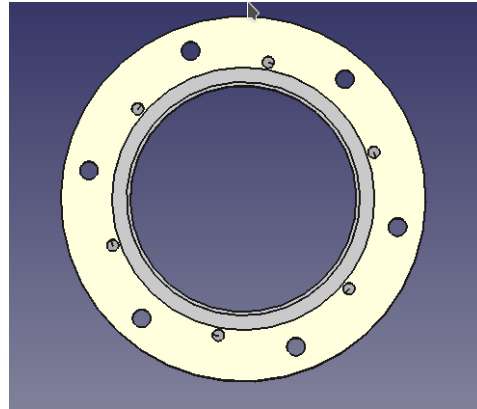
CCMC-LIP



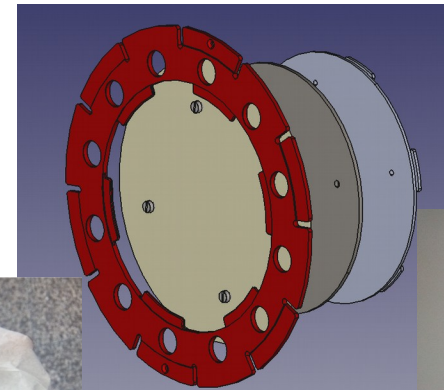
Mix unit (DL)



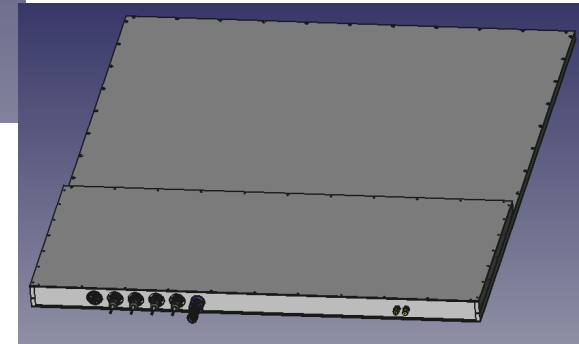
Gas distributor (DL)



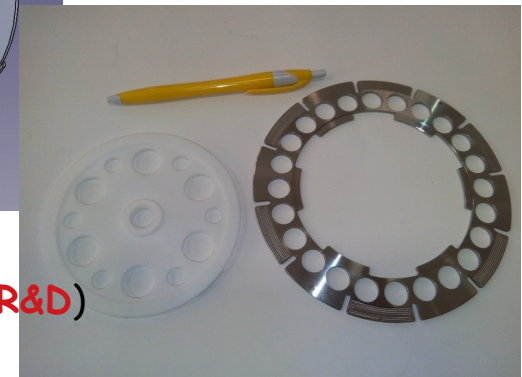
Falange



Mesh support
(Gaseous Detectors R&D)



2x MARTA-RPC
(SWGO)



Mechanical Workshop (MW). Near future.

- Complete the new Lathe operator training.
- Operation of the new **Large area CNC milling machine** already installed.
- **Many works are already scheduled.**
 - Mechanics for the **HRezBrainPET**.
 - Construction of the **HADES-FD** chambers and mechanics.
 - Design and construction of mechanics for a **laser calibration system** for the protoDUNE TPC.
 - More **Spark Chambers** and **Cloud chambers**.