



Science Goal

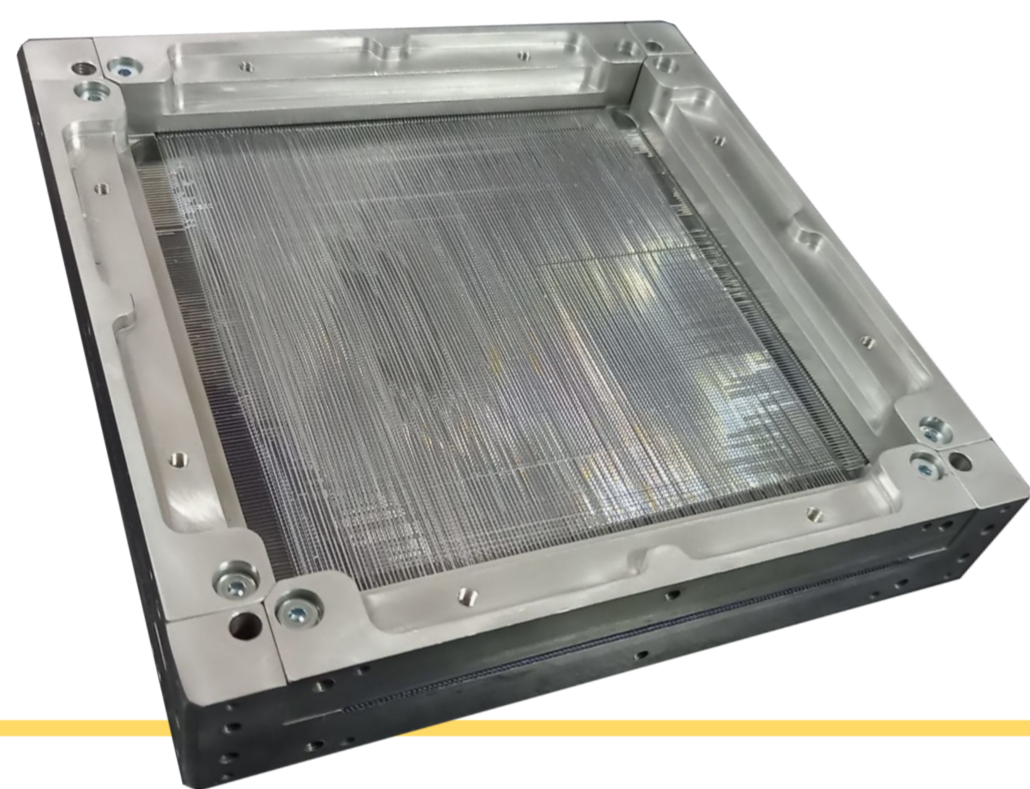
The Ziré detector, part of the **NUSES** (NeUtrino and Seismic Electromagnetic Signal) mission.

The scientific goals of this experiment are:

- Measure the flux of cosmic electrons, protons (and nuclei), of solar/galactic origin, below hundreds of MeV;
- **Study of the cosmic radiation variability** (VAn Allen belt system, effects on space missions, etc.);
- Looking for possible correlation with seismic activity due to **Magnetosphere-Ionosphere-Lithosphere Coupling (MILC)**;
- Detection of 0.1 - 50 MeV photons for **study of transient and stable gamma sources**;
- Paving the way for future **applications of new technology** (SiPM only);
- Detection of 0.1 - 50 MeV photons for **study of transients sources**.

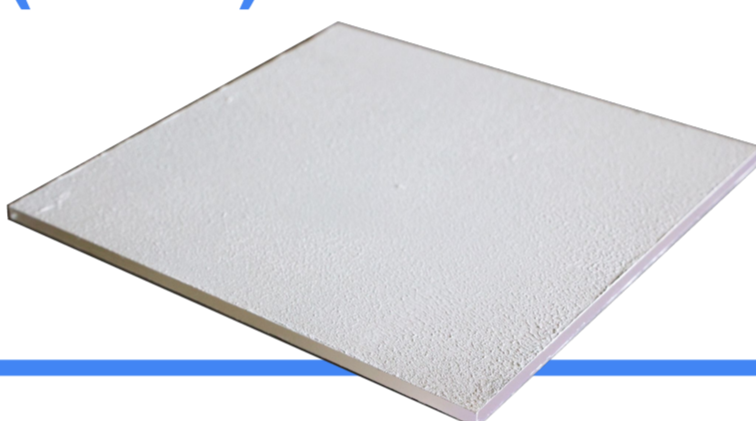
Fiber Tracker (FTK)

3 double layer XY modules of fibers to be used for track identification.



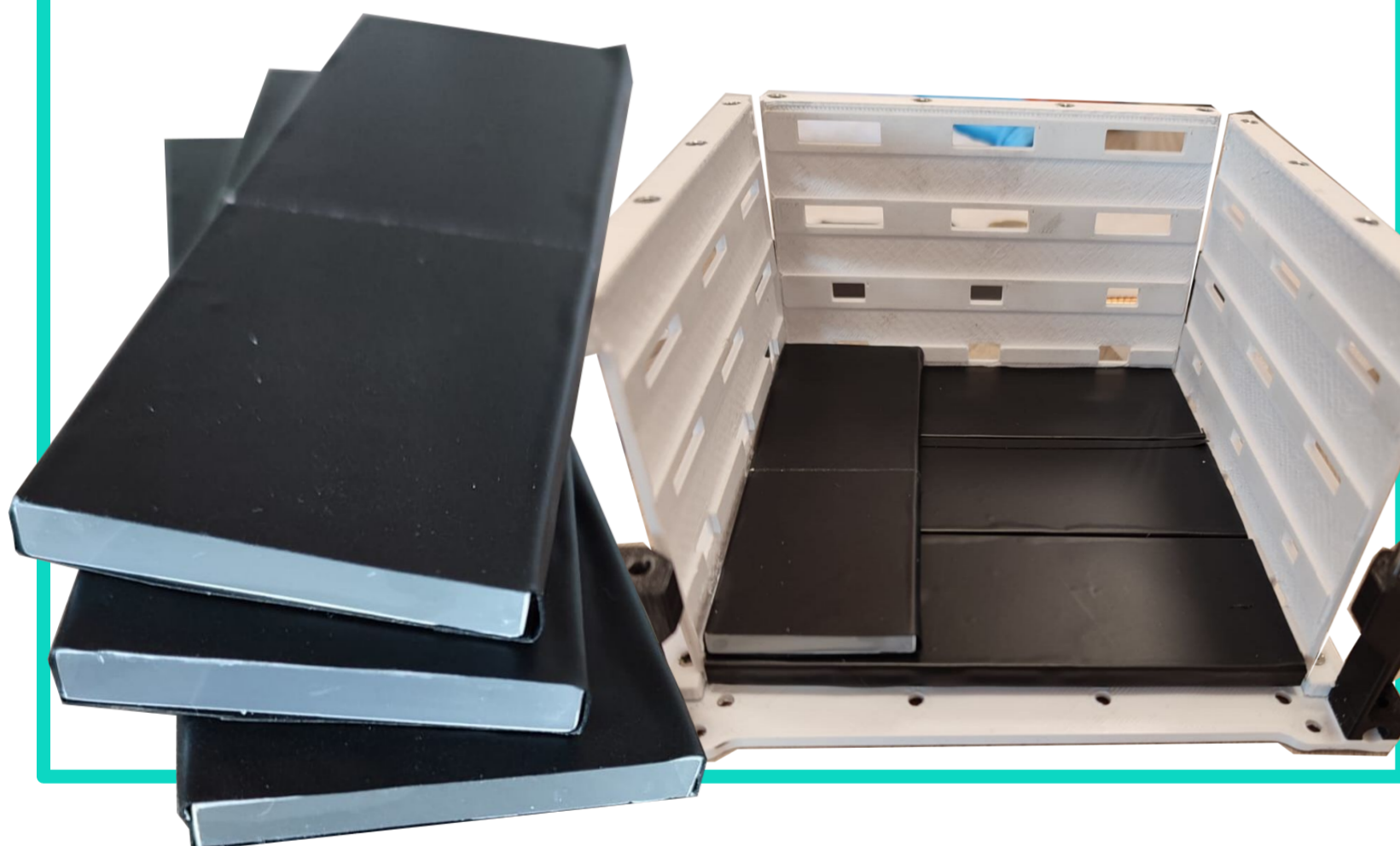
Anti-Coincidence System (ACS)

9 PS layers surrounding the detector.



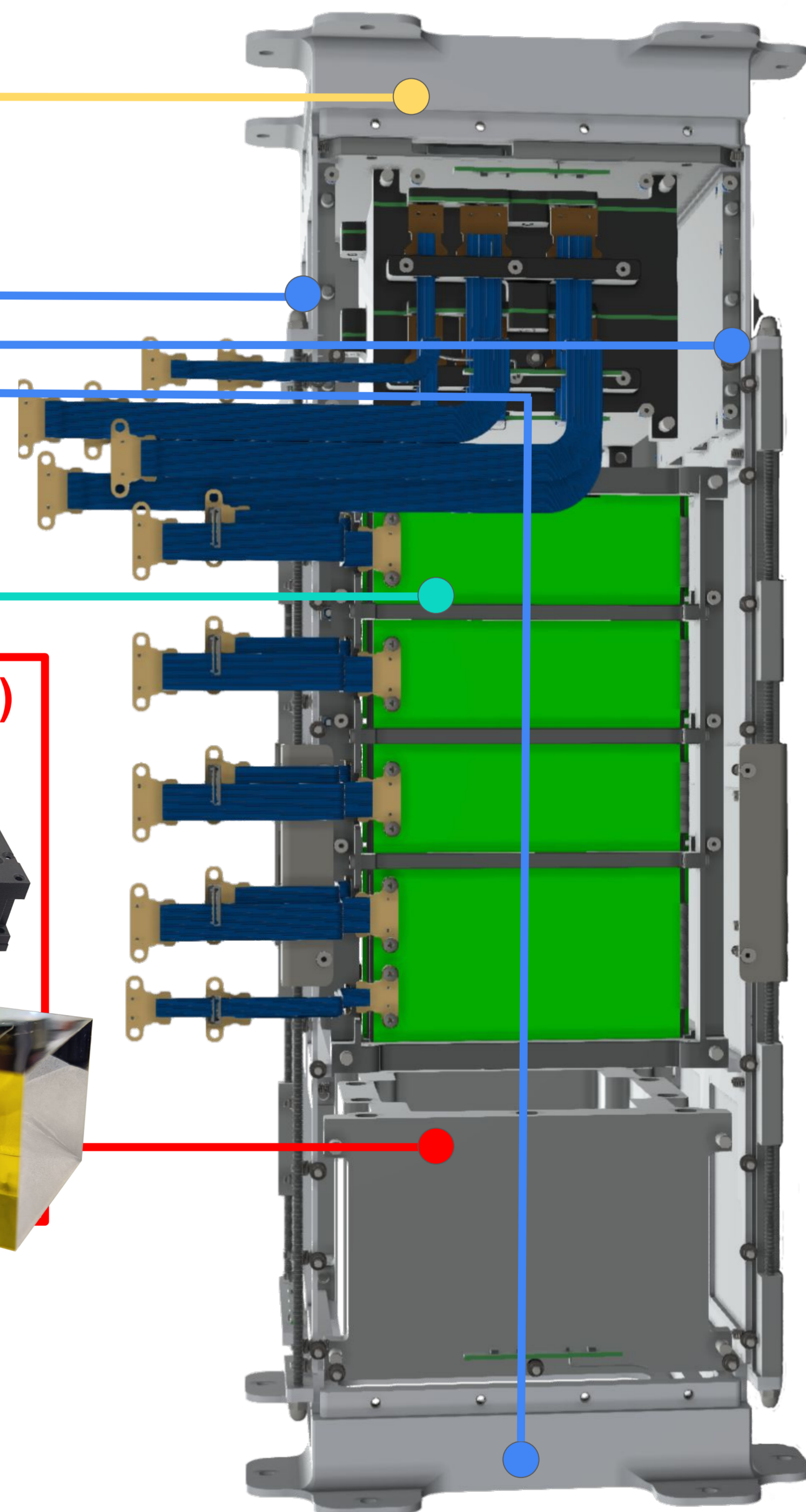
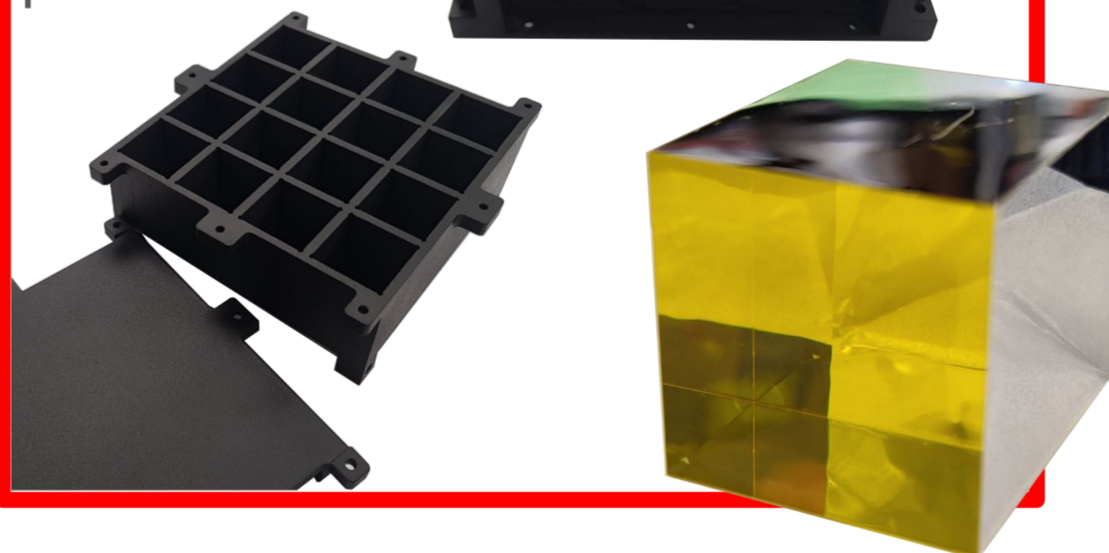
Plastic Scintillator Tower (PST)

Tower of 32 Plastic Scintillator layers. Each layer is composed by 3 bars.

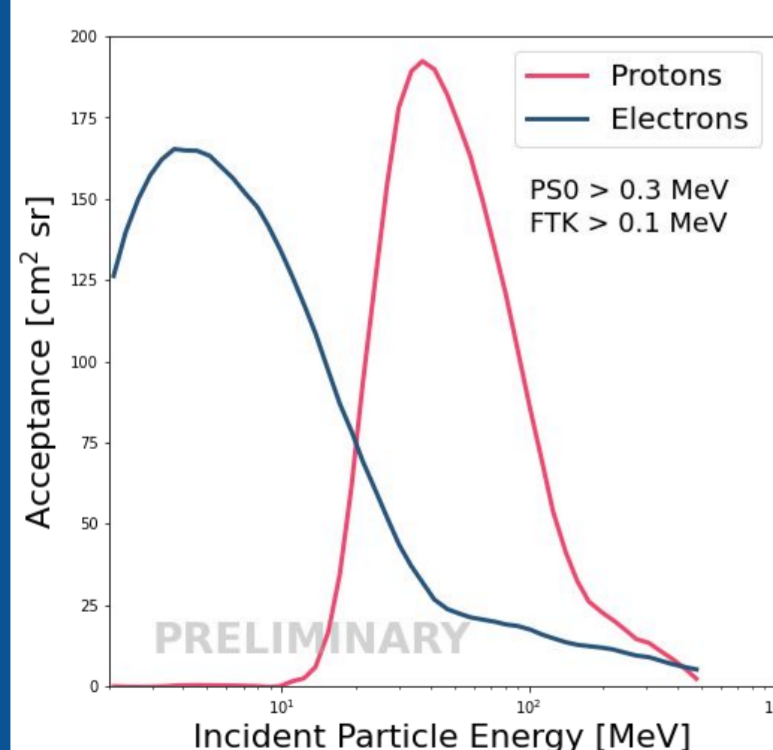


Calorimeter (CALOg)

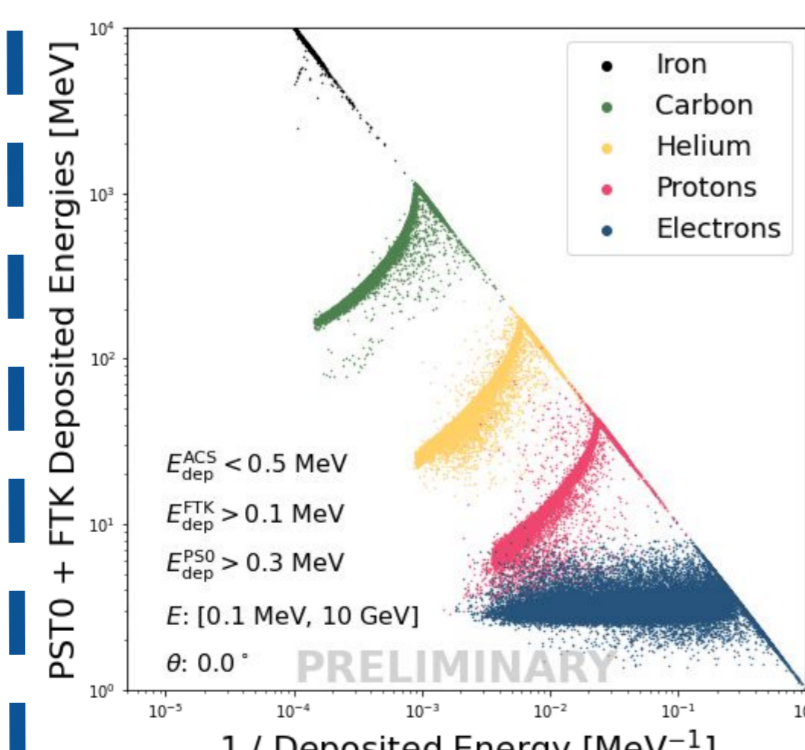
Matrix 4x4x2 of LYSO crystals. Segmented in cubes to be Crystal Eye pathfinder.



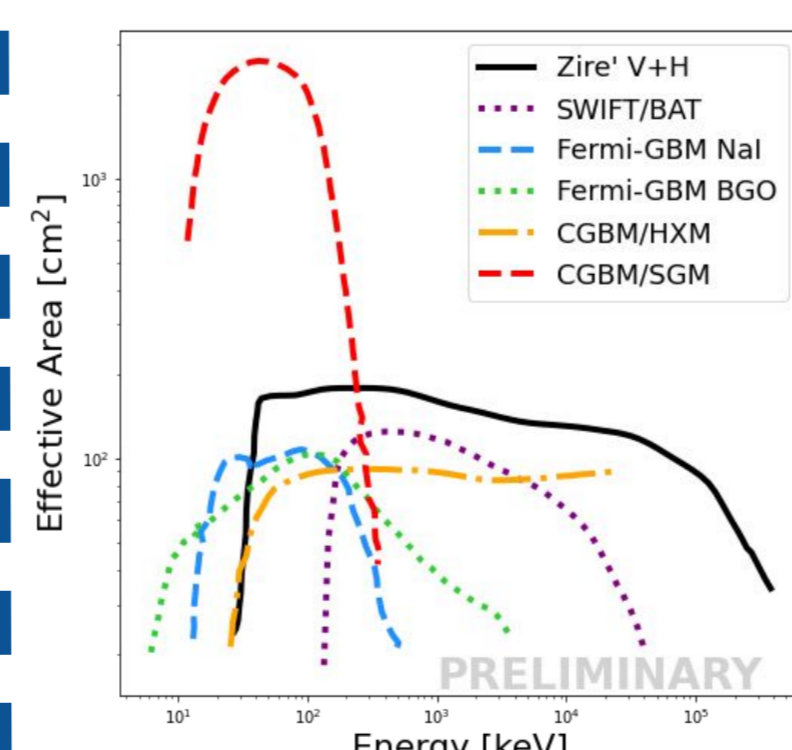
Monte Carlo Simulations & Performances



GEANT4 toolkit used to simulate several incident particles. The trigger condition considered is an **energy deposit above 0.1 MeV and 0.3 MeV in the FTK and the first layer of PST (PS0)** respectively.



Particle Identification by studying the correlation between the energy deposit inside FTK+PS0 and the inverse of the total energy deposition in the whole detector.

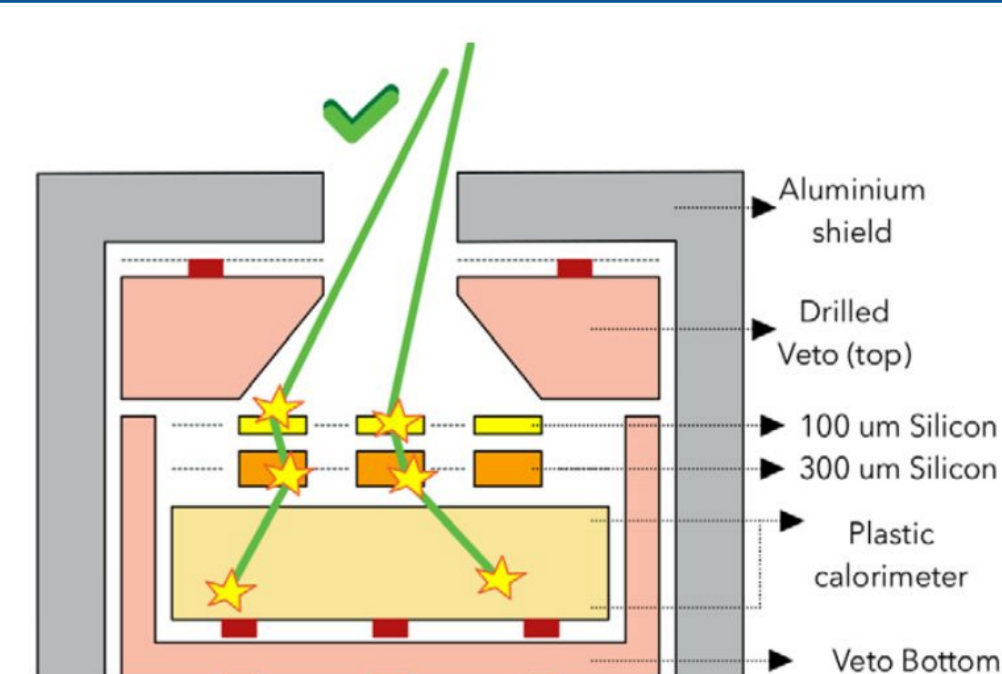


CALOg will be also used for the study of **low energy gamma-rays** between 10 keV and 50 MeV.

Two windows surrounding the CALOg are included for this purpose.

Low Energy Module (LEM)

This module lowers the energy threshold to hundreds of keV.



Now **working** on the payload **construction and test**. HW activities are on **close collaboration** with **Thales Alenia Space Italy** and other companies.