

Astroparticle Physics Laboratory at NYUAD

Francesco Arneodo



**CENTER
FOR ASTRO, PARTICLE,
AND PLANETARY PHYSICS**

جامعة نيويورك أبوظبي

 **NYU | ABU DHABI**

Members

Laura Manenti (Post Doctoral Associate)

Gianmarco Bruno (Research Associate)

Adriano Di Giovanni (Research Scientist)

Osama Fawwaz (Instructor)

Saarah Pirbhoy (Research Assistant)

Lolowa Alkindi (Kawader fellow)

Capstone students: Umang Mishra, Panos Oikonomou,
Henry Roberts, Nour Samy

Phd Students: Isaac Belew Sarnoff

External Collaborators

Giovanni Franchi (AGE Scientific, Italy)

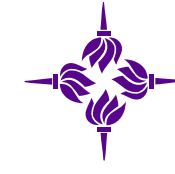
Valerio Conicella (Università di Roma III, Italy)

Rodrigo Torres (University of Florence)

Paolo Giommi (ASI and IAS-TUM)

جامعة نيويورك أبوظبي





- All started in 2013
- Moved from Gran Sasso to Abu Dhabi
- What activities to establish there?
 - Astronomy and Astrophysics were there
 - No particle physics
 - Strong technology and infrastructural support
- The strategic decision was (together with Adriano)
 - Bring XENON as strong international collaboration
 - But establish a group with local R&D on detectors



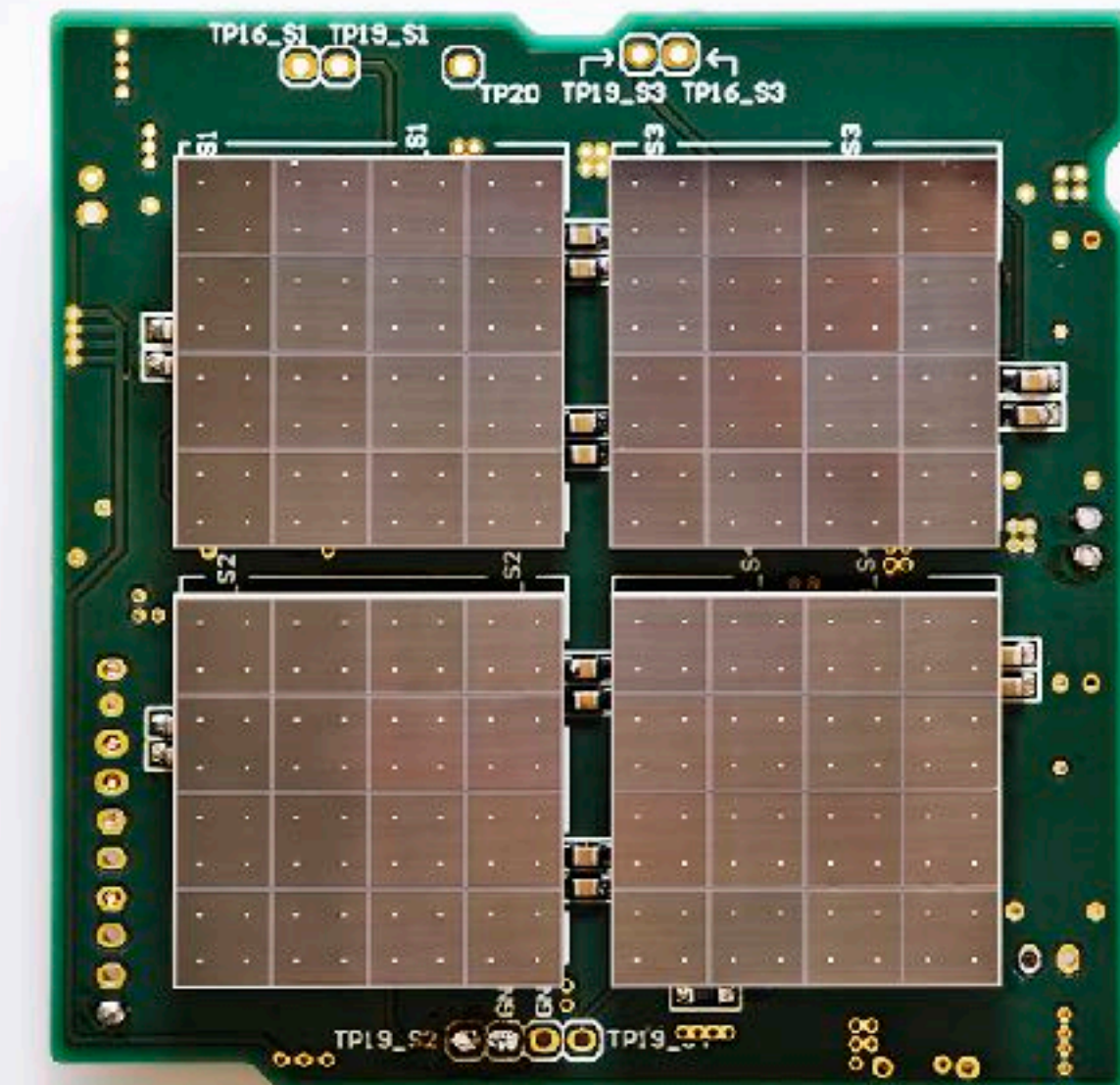
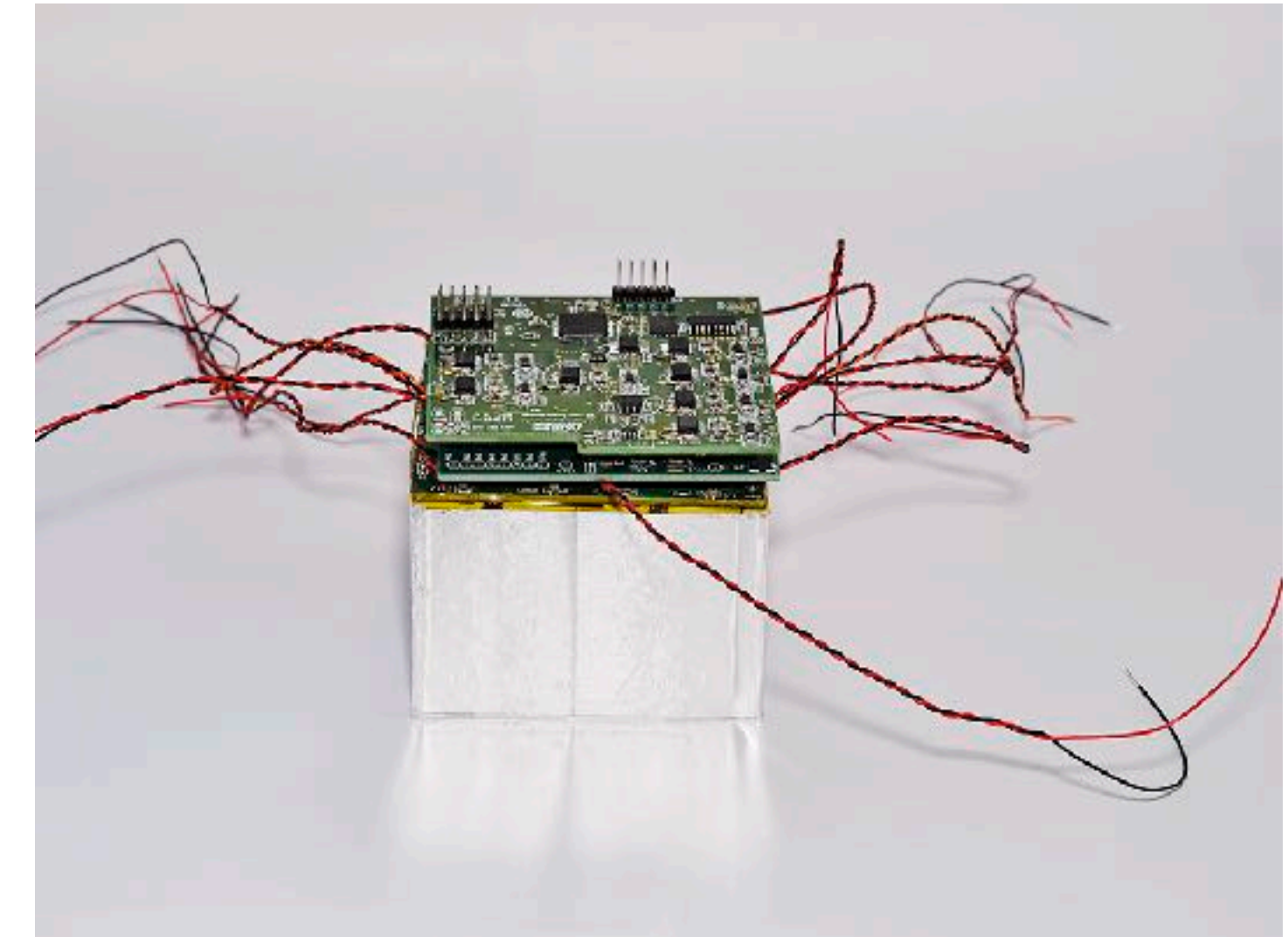


- Invested on a basic toolkit of a particle detector laboratory:
 - Scintillators (organic and inorganic)
 - Gamma-ray spectroscopy
 - Silicon Photomultipliers
 - Cryogenics
 - Data analysis capabilities
 - Problem: only one person!
 - The group eventually grew to 3 +1
 - Now we are 4+1 plus other “part time” collaborators and students.





- Strong local interest in space
- In 2014 we (slowly) started our involvement
- Proposed a GRB detector for the Emirates Mars Mission (not accepted)
- In 2017 started the development of a CubeSat scientific payload
- In 2019 started involvement with the Lunar Rover mission of Mohammed bin Rashid Space Center



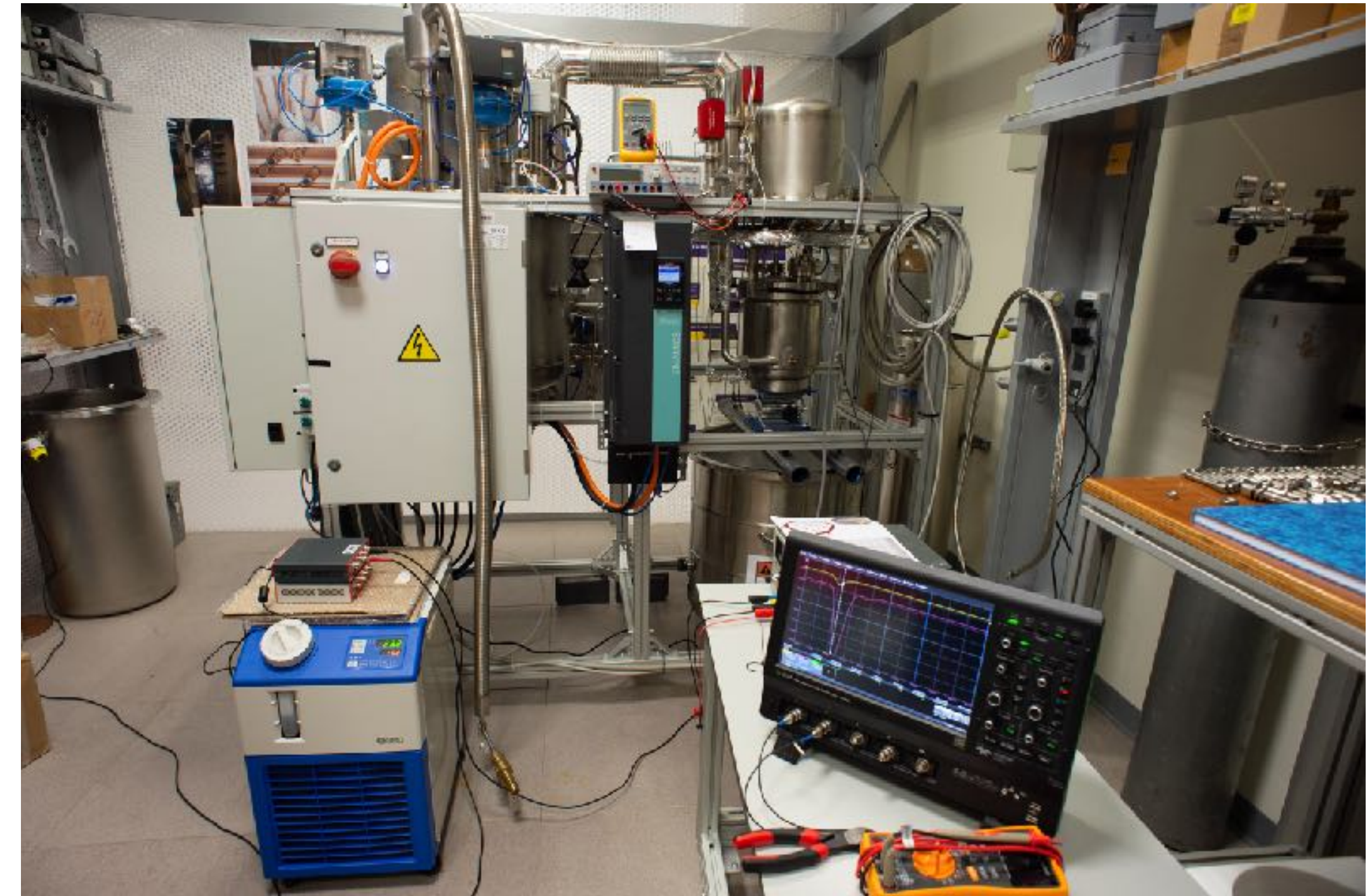


- In 2016 started applying our skills to cultural heritage
- Started with X-Ray fluorescence
- Collaboration with the Louvre Abu Dhabi
- A lot of fun



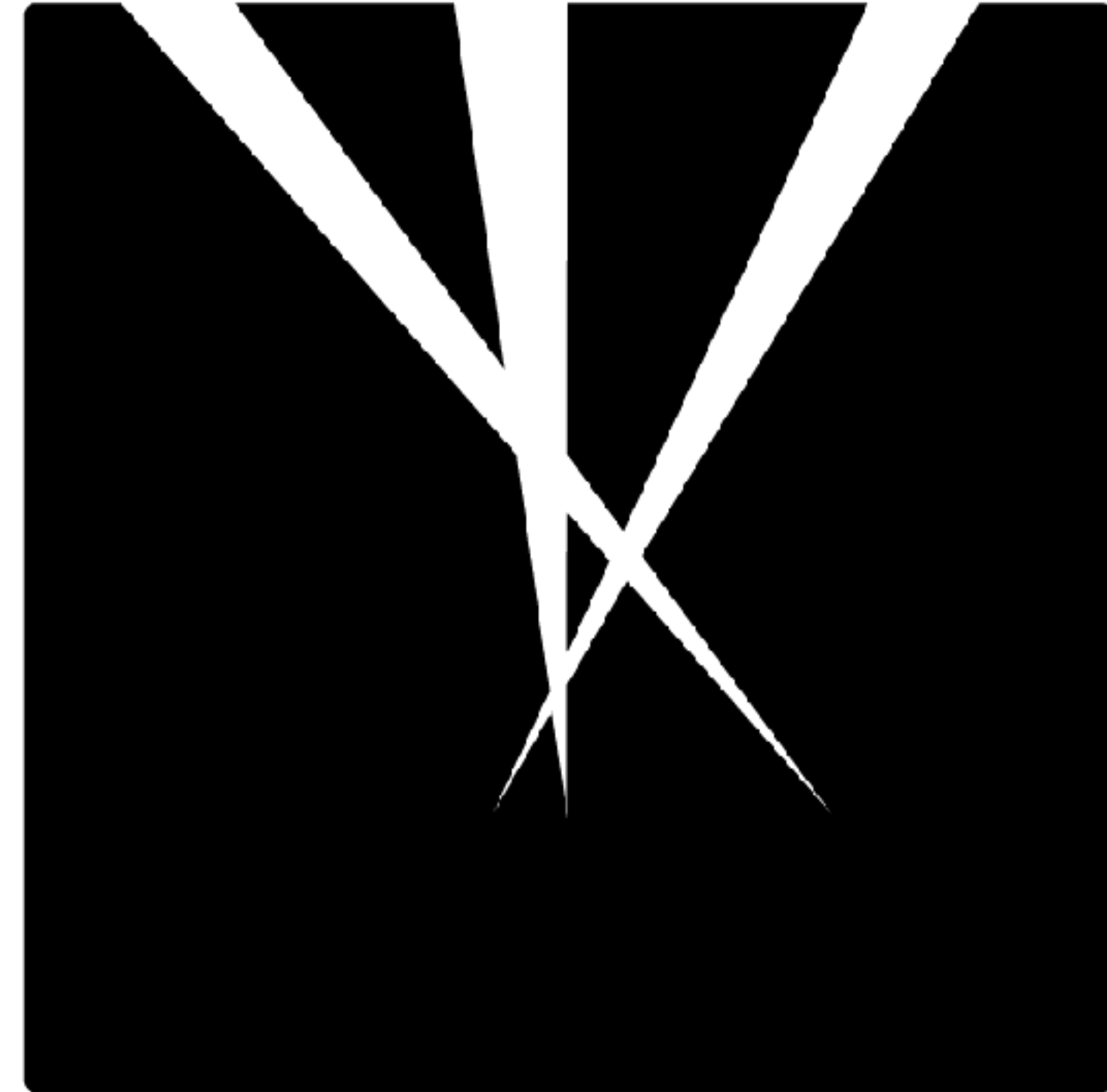


- In 2018 we acquired an essential piece of equipment
- “CRYSTALX”, a cryogenic system for the liquefaction of xenon or argon (see Gianmarco’s presentation)
- We also started an R&D for detection of dark photons (see Laura’s presentation)





In 2019 we became one of the clusters of the new Center for Astro, Particle and Planetary Science.





- XENON
- DARWIN
- CHNET (Cultural heritage)
- Open Universe
- CERN neutrino platform





