



Working group: Instrumentation at APC

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Instrumentation at APC

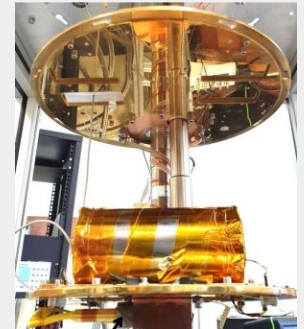
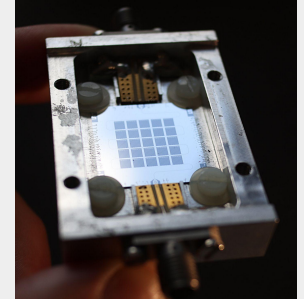
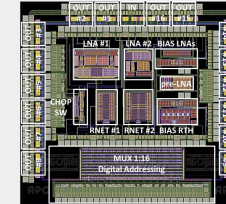
APC is involved in instrumental activities related to several **projects** and **R&Ds**. Roughly **10 researchers** and **35 engineers** involved with expertise in electronics, microelectronics, thermal/mechanics, cryogenics, optics, photodetection, etc.

Projects

- ATHENA
- ATLAS
- CTA
- DUNE
- EUSO
- IGOSAT
- KM3NET
- LISA
- LITEBIRD
- LSST
- QUBIC
- SVOM
- VIRGO

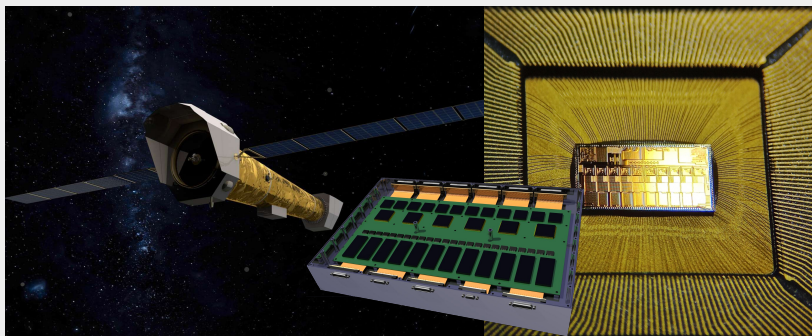
R&Ds and valorizations

- BELISAMA
- Chipiron
- NG-Cryo
- NG KIDs
- R&T BiCMOS
- R&T PhotoDetection Unit
- R&T SiPM post TARANIS
- R&D ComputeOps
- R&D Machine Learning
- Optique : Squeezing & métrologie

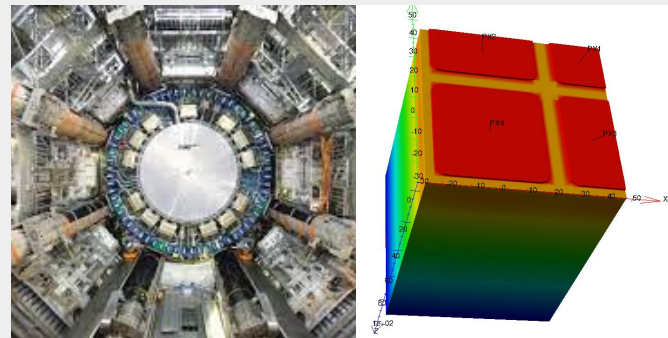




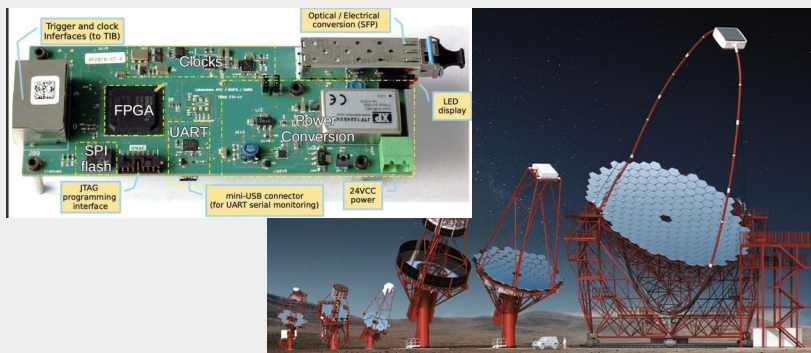
ATHENA (X astronomy)



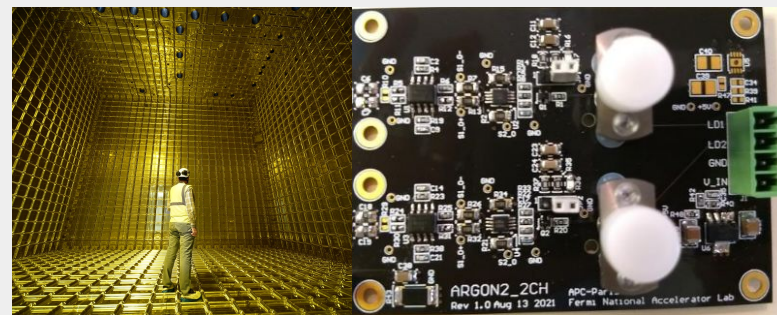
ATLAS (Higgs)



CTA (γ astronomy)

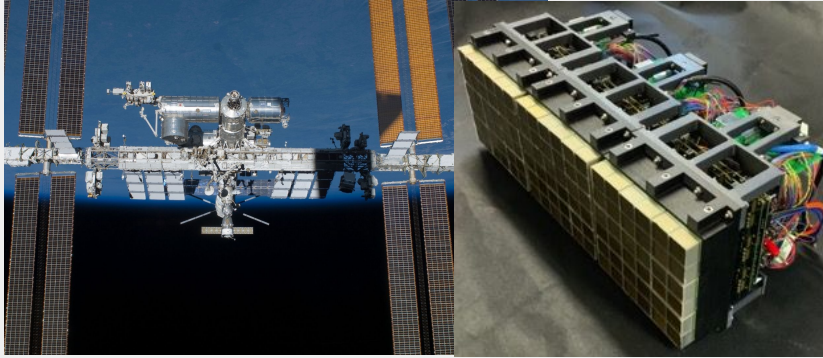


DUNE (Neutrinos)

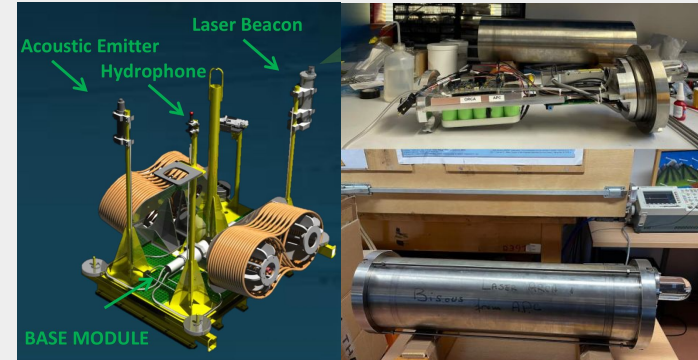




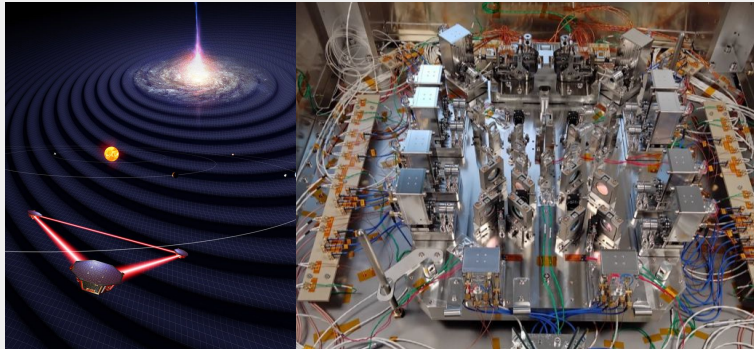
EUSO (UHECR)



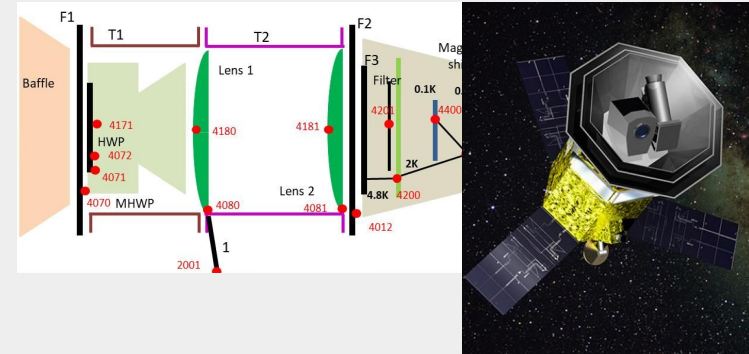
KM3NET (Neutrinos)



LISA (Grav waves)

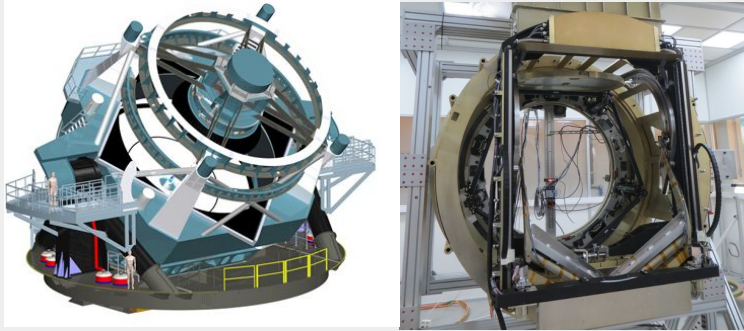


LITEBIRD (CMB)

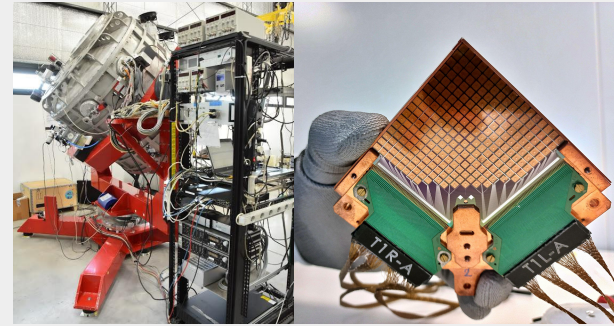




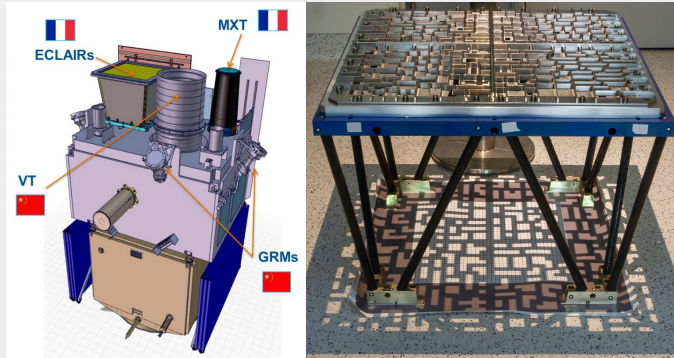
LSST (Optical astronomy)



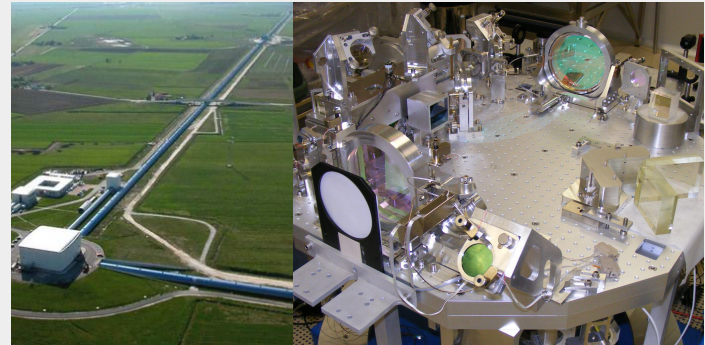
QUBIC (CMB)



SVOM (Gamma/X astronomy)



VIRGO (Grav waves)





General points

- Numerous projects and R&Ds involving instrumentation activities are carried out by people at APC. However, a **minority** of researchers are involved in instrumentation developments.
- The lack of instrumentalist together with the differences between researchers and engineers imposed by the system can create **disconnections between the “scientific” and “instrumental” activities.**
- The **synergy between different instrumentation teams** could be improved.
- The **internal visibility and valorization** of the instrumental activities could be improved.



Ideas proposition

We have identified a series of pragmatic actions to try to address some of these points.

Visibility / communication:

- Restore visits to the instrumentation/measurements labs at APC open to all APC staff (clean room, photodetection, mm lab, low noise lab, integration hall, metrology, etc.)

Synergy / interaction:

- Series of short seminars focused on specific topics directly related to technical activities (problems, ideas, tools, etc)
- Mailing list instrumentation
- Online inventory of equipments that can be shared and wishlist (currently in progress)
- Identify possible internal trainings (crash courses for tools related to instr.?)



Discussion

In the context of **new instruments** that become more and more complex, with specialized subsystems, large scale and long terms developments, what is the **APC strategy** about **hardware developments**?

Do we aim to have a **strong instrumental implication** on the new generation instruments or do we want to be in charge of niche subsystems as a mean to support the implications on data analysis?

Isn't the **instrumental comprehension**, particularly of complex instruments, key to have a strong **data analysis** implication?