



Table 511 - Presenter Forum



CAEN Company profile astrophysics



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CAEN for astrophysics

Ferdinando Giordano – ICRC 2021

ONLINE ICRC 2021



Our background

CAEN is one of the most important spin-offs of the Italian Nuclear Physics Research Institute, founded in Viareggio in **1979**. CAEN designs and manufactures sophisticated electronic equipment for nuclear physics research and is today among the world's leading companies in the field: there are several hundreds of thousand CAEN **Low/High Voltage and data acquisition channels** now working in all the most important Nuclear Physics Laboratories over the World.

In the last years CAEN diversified its offer, extending its market, taking part into national and international programs and becoming a real "**Innovation Company**". In this way CAEN joined to its core business new experiences in new fields such as the UHF RFID, the microelectronics, the aerospace applications, biomedicine, and homeland security.



Power Supplies

Since 1979 CAEN designed and manufactured power supplies for nuclear physics detectors. Over the decades our experience gave us a leading edge in various applications, ranging from **high voltage** detector bias to **extreme low voltage** frontend supply, as well as working in **harsh and hostile environments** (radiation, magnetic fields, high altitude, dust, etc.).

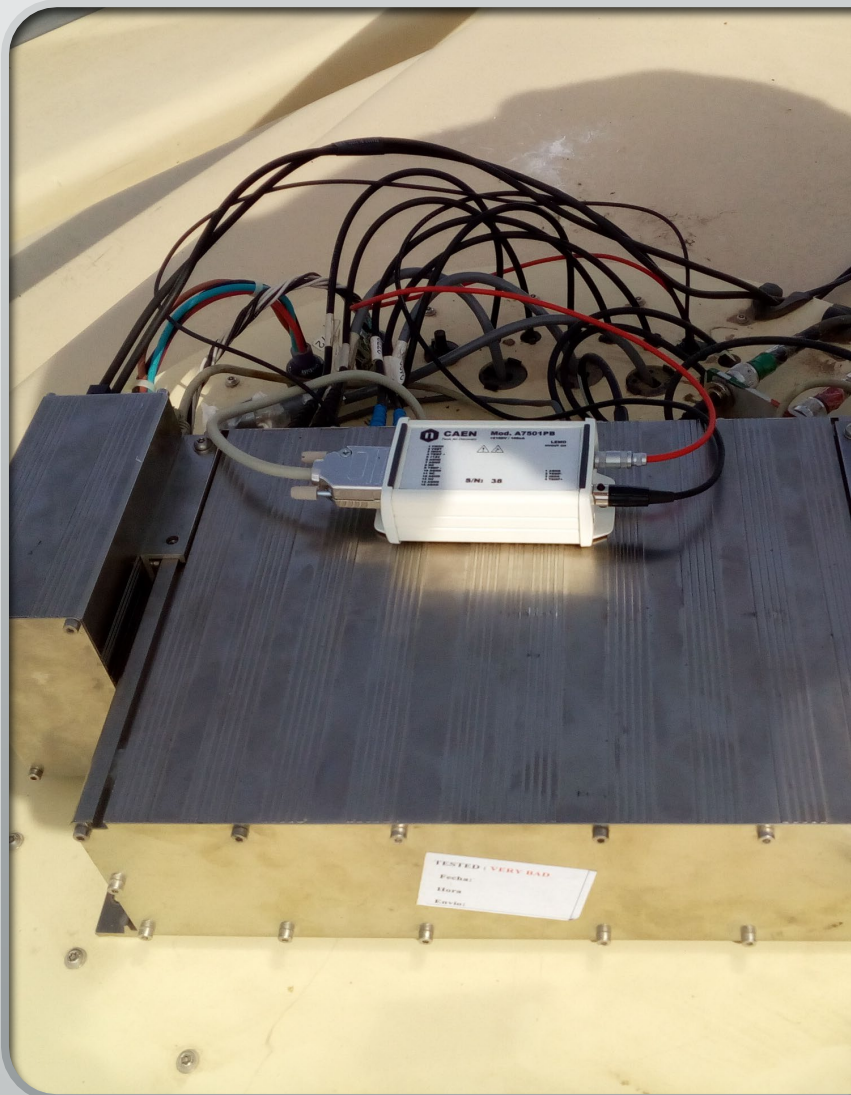
We have a dedicated engineering department capable to take on any design challenge, and a maintenance team able to assist the installation on any World location.



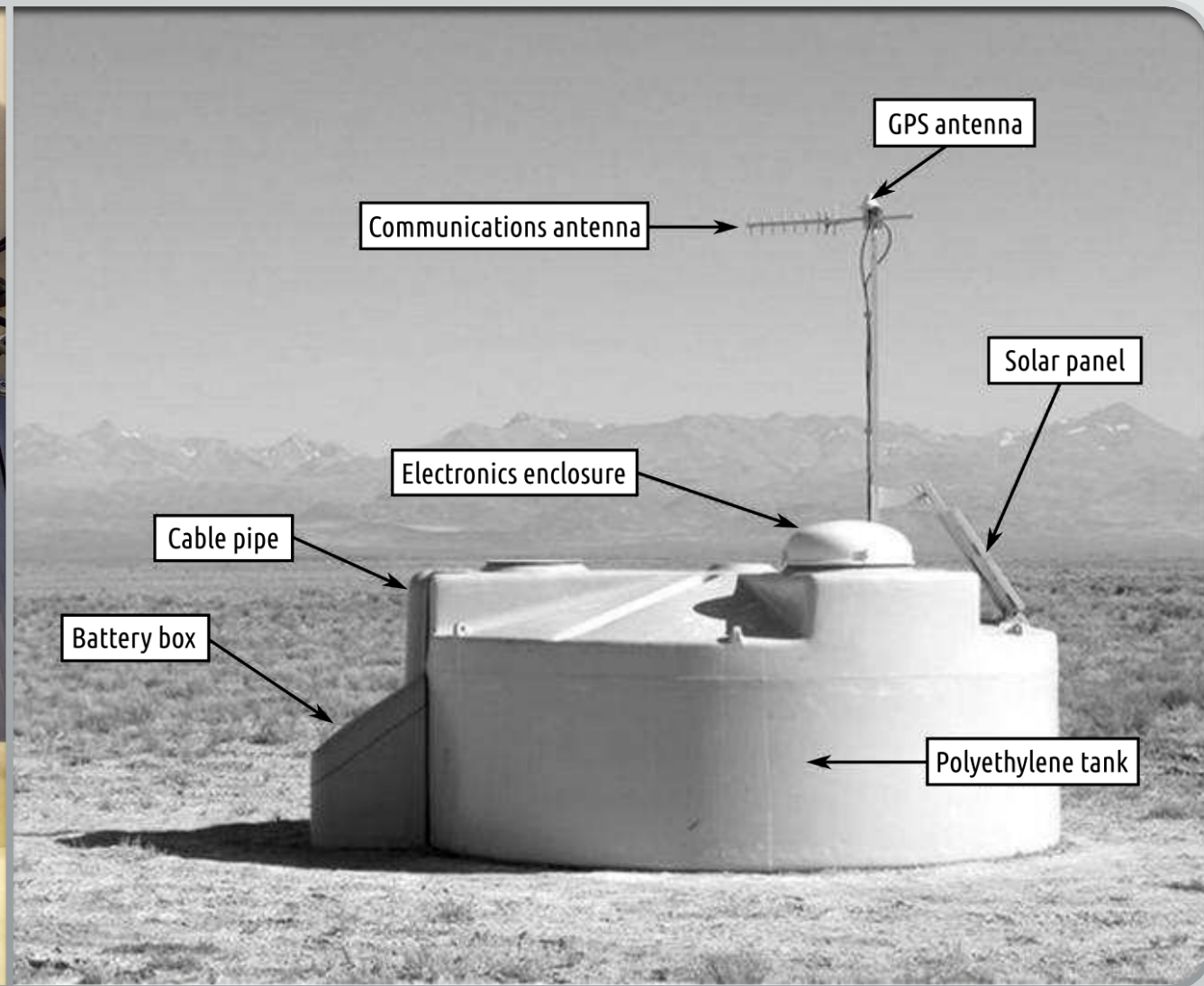
Acquisition Systems

More recently CAEN has expanded its portfolio to **digital acquisition systems**, designing and producing a wide range of waveform digitizers and dedicated acquisition systems for physics experiments. Moreover, we engineered scalable solutions easily adaptable to different detector via **dedicated ASICs**, these are ideal for small laboratory setups or distributed experiments with thousands of channels all automatically synchronized.





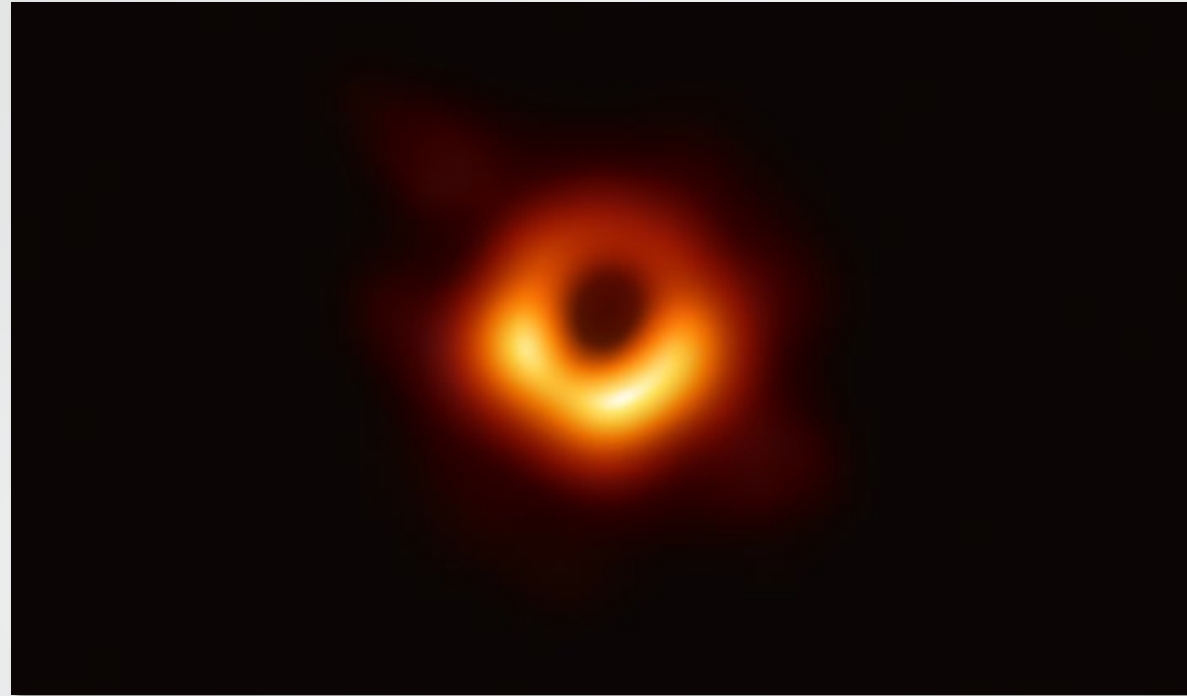
HV module for PMT bias, designed to survive 15+ years of operation in harsh conditions.



Pierre Auger

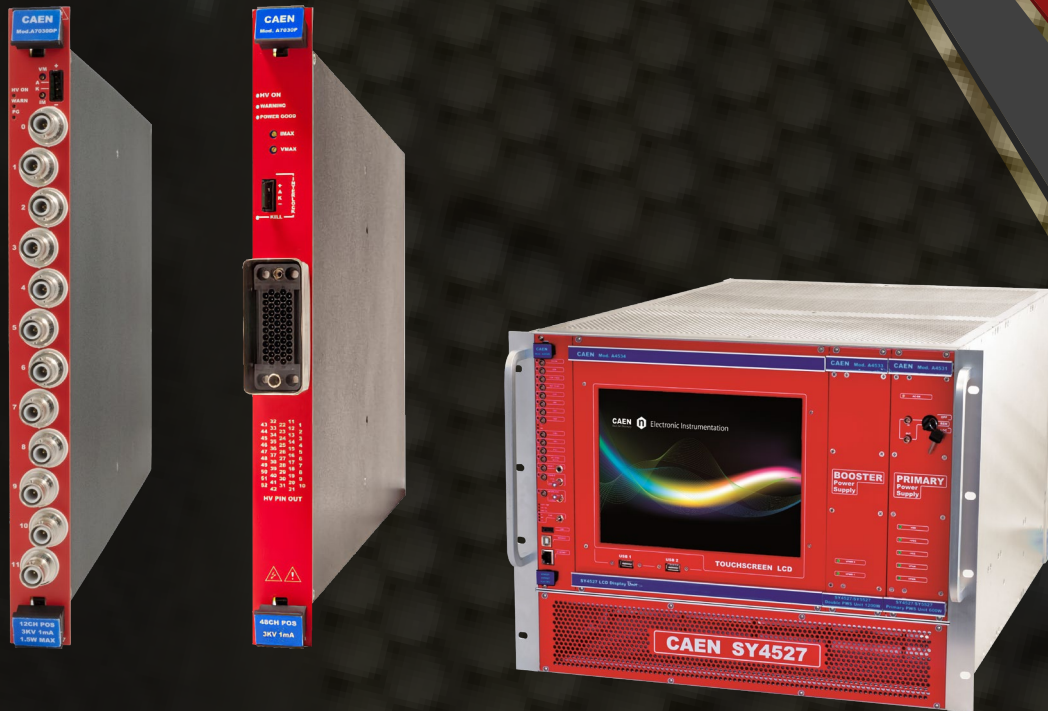
ALMA

The antenna acquisition system, placed in the antenna's base cabin, is powered with CAEN custom developed Low Voltage Power Supply unit.



HAWC and LHAASO

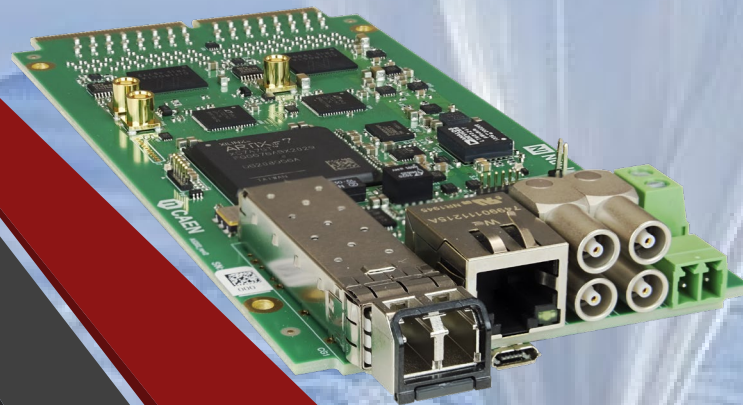
CAEN supplied the necessary high voltage boards for the PMTs.



VERITAS and HELIX

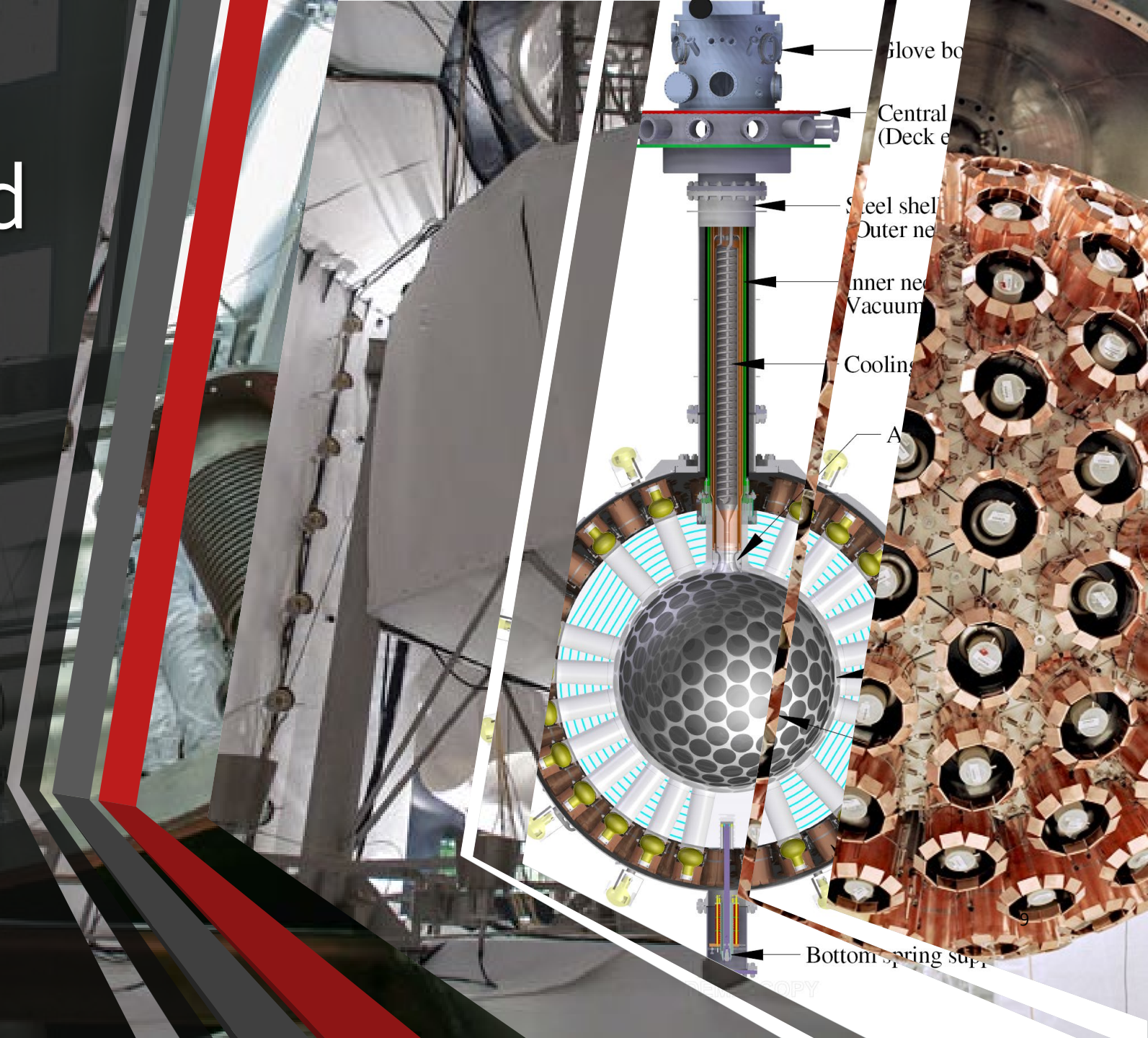
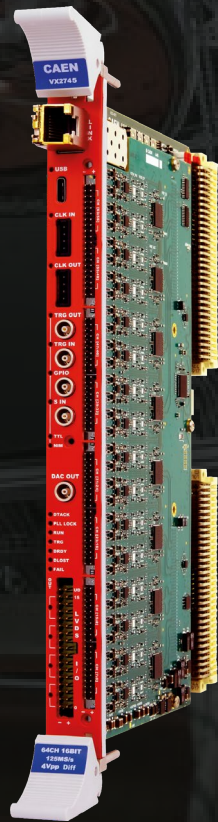
SiPM readout systems is based on the CITIROC chips provided by CAEN.

CAEN supplied the necessary HV boards for the PMTs.



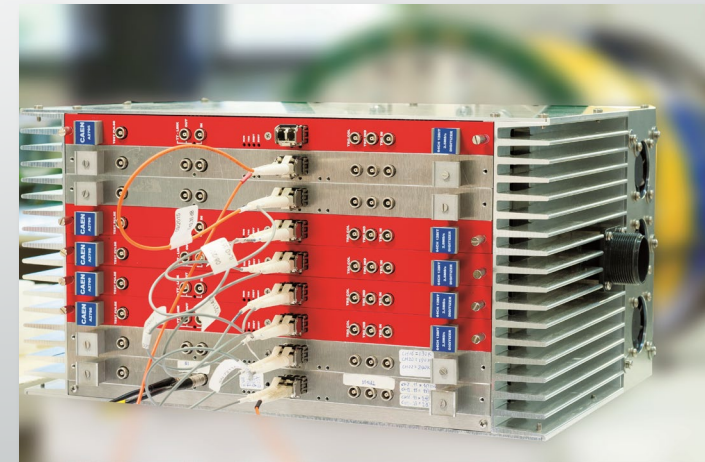
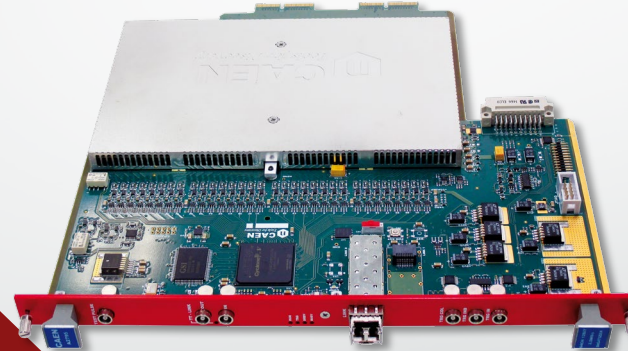
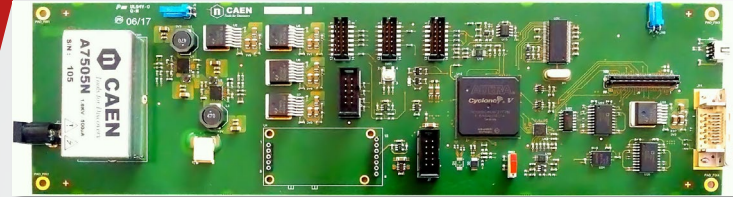
DARKSIDE and DEAP-3600

Various Power Supplies and data acquisition system based on the new CAEN digitizer VX2740.



JUNO and ICARUS

Power Supplies and dedicated acquisition system boards:
veto board A1703 and
TPC readout A2795



Educational Experiences


CAEN has a family of education products, some of them are designed to take advantage of freely available cosmic-rays.

- SP5620CH – Cosmic Hunter
- SP5622B – Detection system Plus
- SP5600D – Kit Beta



Outlook

- CAEN has a large portfolio of products that can be a solution readily available for many experiments.
- Our R&D department is always looking for new challenges to push the technological boundaries, working together with researches to achieve the best possible scientific outcome.
- We are willing to collaborate with other industrial leaders to build large telescope and research infrastructures.



Thank you for your attention

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