



Annual Users' Conference

**ADVANCING RADIATION SAFETY.
EMPOWERING PROGRESS.**

M Resort, Henderson, NV | June 15 – June 18



MIRION
TECHNOLOGIES

*Advancing Radiation Safety.
Empowering Progress.*

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**Scan QR code to log your
attendance for today's
(Thursday, June 18th)
breakout session**



Advancing Innovation with Specialty HPGe Detector

Gabriela ILIE, Ph.D.

Product Line Manager – Specialty Detectors

Mirion Connect | Annual Users' Conference 2026

Henderson, NV

Outline

- *Mirion Specialty Detector Portfolio Overview*
- *Advancing Nuclear Science with Specialty Detectors*
- *Worldwide projects using Mirion Custom Detectors*
- *Highlighted examples*

Mirion Detector Portfolio Overview



Meriden, CT – Center for HPGe Solutions

Over **50+ years of expertise** in HPGe detector technology

Dedicated to **industrial-scale manufacturing of advanced solutions**

Providing **standard and innovative HPGe detectors** for industry

Customers: **United States and Asia**



Lingolsheim, France – Hub for Advanced Project-Based Research

Over **50+ years of experience** in innovative HPGe detector solutions

Specialized in challenging, research-driven projects

Skill-based project teams covering detectors, cooling, electronics, and mechanics

Customers: **Worldwide**



Olen, Belgium – Center for HPGe and PIPS Detectors

Over **35+ years of experience** in detector technology

- **Industrial-scale manufacturing** of innovative HPGe and PIPS detectors

- **Customers:**

- Europe and Middle East – HPGe
- Worldwide - PIPS

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All required manufacturing capabilities in house!

Specialty products building blocks



Specialty Products Building Blocks

Combination of **several detectors** in a **single cryostat**
(detectors array)

Segmentation (position information added to
spectrometry)

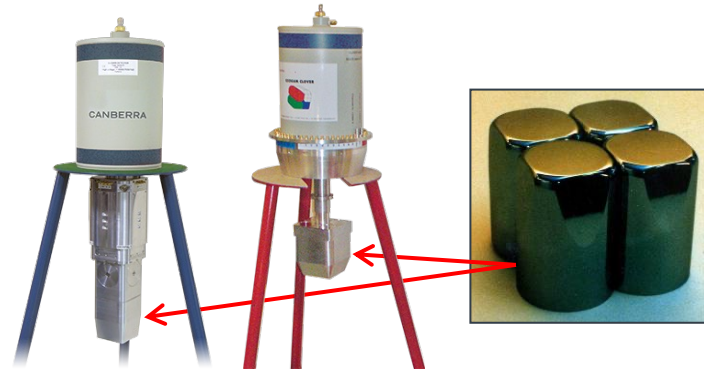
Encapsulation and Ultra-high vacuum (UHV) sealing:
for close-packing arrays and rough-motion applications

Electrical cooling, with different types of cooler
available

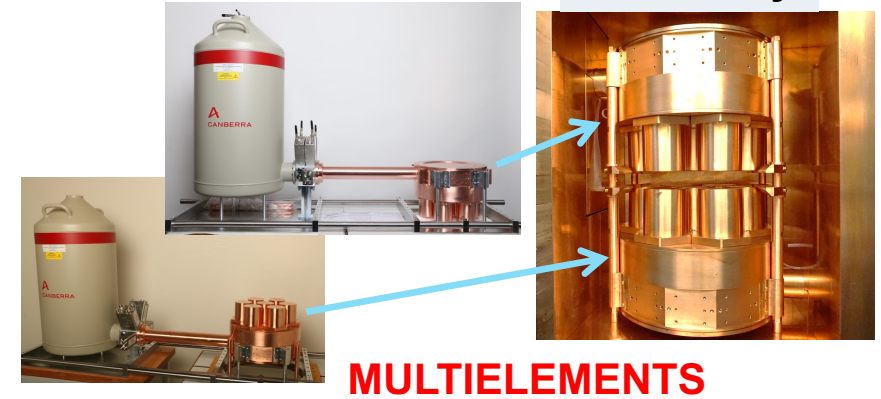
Mirion Technology Building Blocks: Array Detectors

- Several crystals inside a unique cryostat
- Various purposes
 - Doppler correction
 - Flux dilution
 - Interaction localization information
 - Enhance efficiency
 - Solid-angle coverage
 - Cost reduction vs. multiple cryostat

CLOVER Detectors



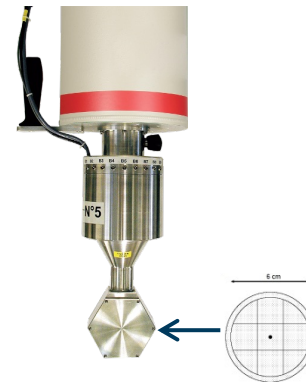
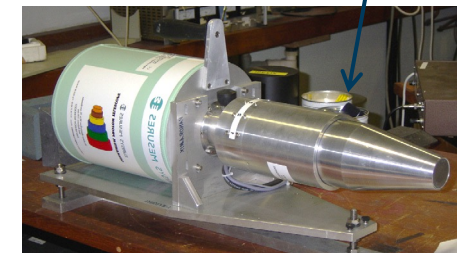
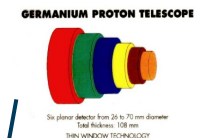
CUP Array



MULTIELEMENTS Detectors

STACK Detectors

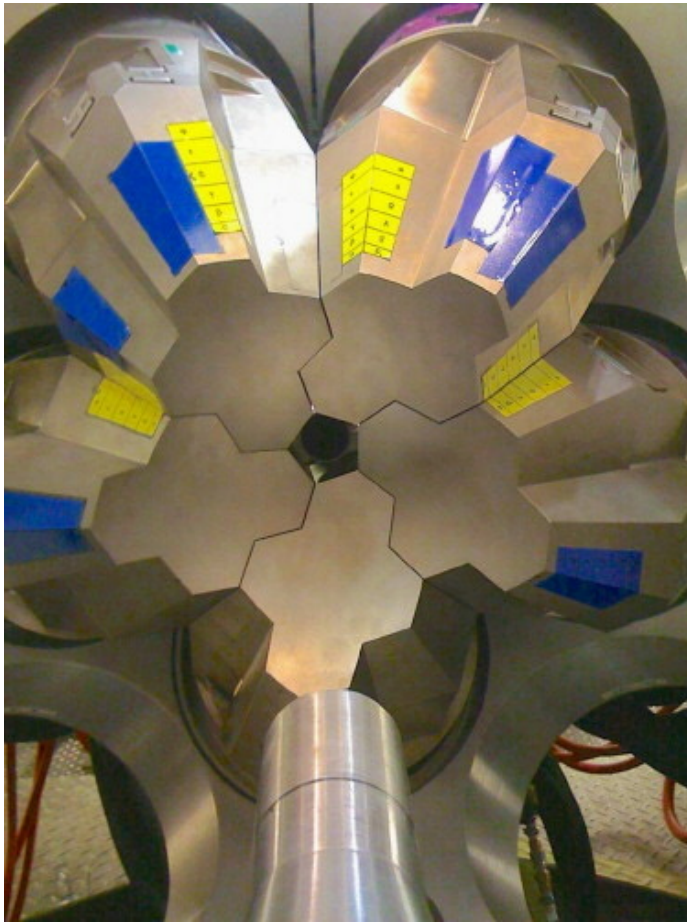
Proton Telescope



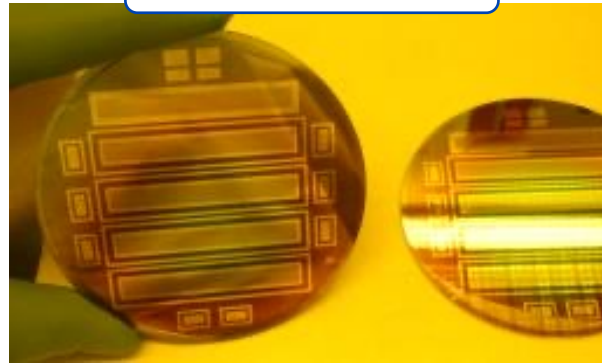
Grape Telescope



Mirion Technology Building Blocks: HPGe segmentation



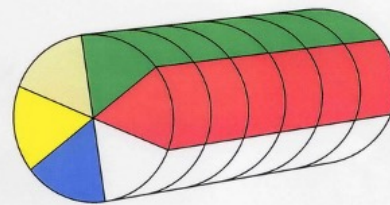
Wafers



DSSDs

N-type coax

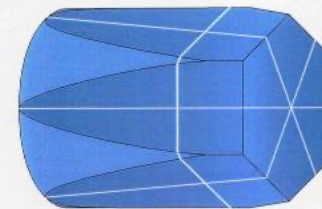
36 SEGMENT GERMANIUM DETECTOR



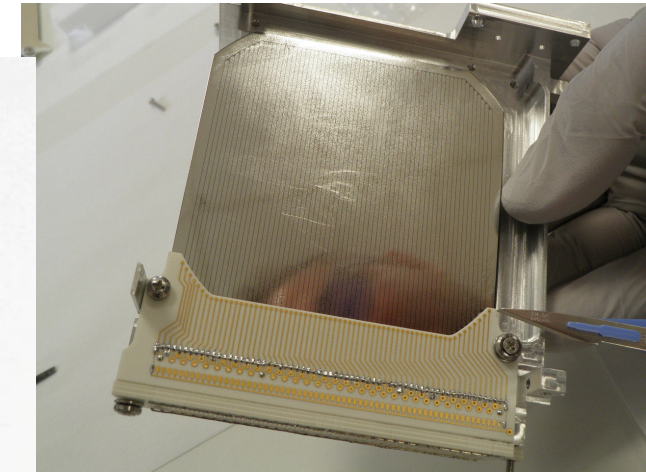
at 1,33 Mev { Full Volume FWHM = 2,5 Kev
Segment FWHM : 2,1 Kev to 2,7 Kev

All Fet at room temperature

12 SEGMENT CANISTER

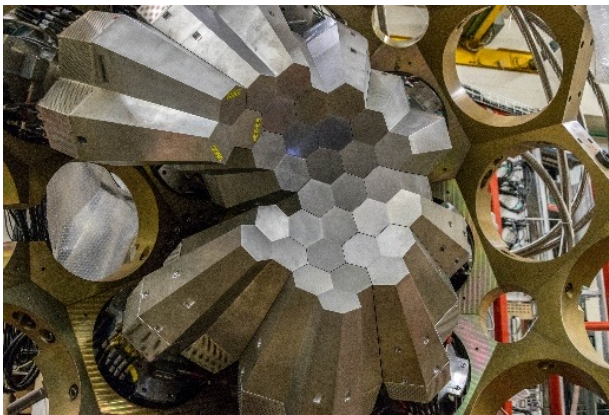


^{60}Co { Position FWHM : 12 x 2,0 keV
Full Volume FWHM : 2,2 keV



Mirion Technology Building Blocks: Encapsulation

- Place the HPGe crystal inside a separate, sealed, canister
- Protect HPGe from atmosphere
- Allows for versatile and modular HPGe assemblies inside various cryostat configuration



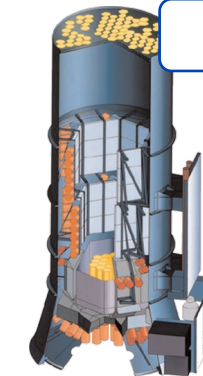
EUROBALL, MINIBALL, AGATA...



MARS ODYSSEY



SELENE



SPI-INTEGRAL



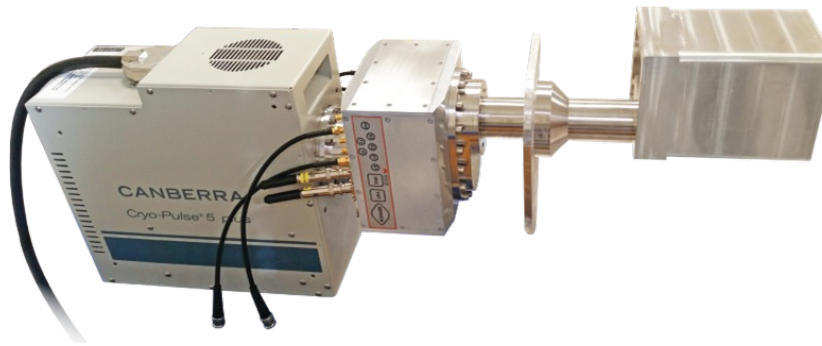
NASA DRAGONFLY mission to TITAN
On-going

Mirion Technology Building Blocks: Electrical cooling

Key unit: CP5-Plus Pulse-tube cooler

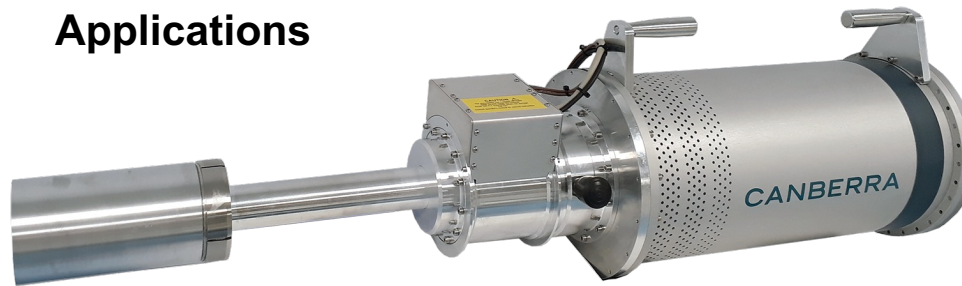


**Synchrotron
Applications**



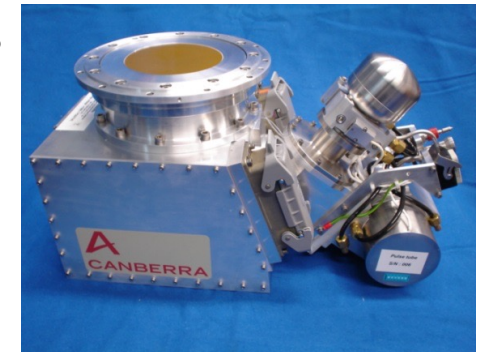
**Nuclear Physics
Applications**

**Airborne
Applications**



Medical Applications

Special Applications



By leveraging building block technologies, we reduce risk, accelerate innovation, enhance performance, and support future custom HPGe detector developments.

Custom HPGe detectors for Nuclear Physics Applications



Custom Gamma-Ray HPGe Detectors

Key Features

- *Composed of 1 or several HPGe crystals in a single cryostat (e.g. Clover/Cluster/GRETA, etc)*
- *Enables high efficiency and gamma-ray coincidence measurements*

Research Impact

- *Widely used in nuclear structure studies at facilities like FRIB, Universities, National Lab, etc*
- *Provides high multiplicity gamma detection for complex decay schemes*
- *Searching for the Needle in the Haystack: **Neutrinoless Double-Beta Decay Experiments***

Mirion Clover Detectors

- *Mirion developed for the EUROBALL project the so-called Clover detector consisting of 4 HPGe crystals put closely together in a unique cryostat. This allows high detection efficiency combined with best energy and timing resolution.*
- *One of the primary benefits of a close packed array design is the enhanced efficiency arising from the reconstruction of inter crystal Compton scattered events.*
- *It was demonstrated that with four 20% crystals the total relative efficiency in add-back mode (time stamped) could be as large as 130% at 1.33MeV.*
- *Reference publication: **Duchene et Al NIM A 432 (1999) 90-110.***

From a raw HPGe
crystal to a Clover



Mirion Clover Detectors – Key Features

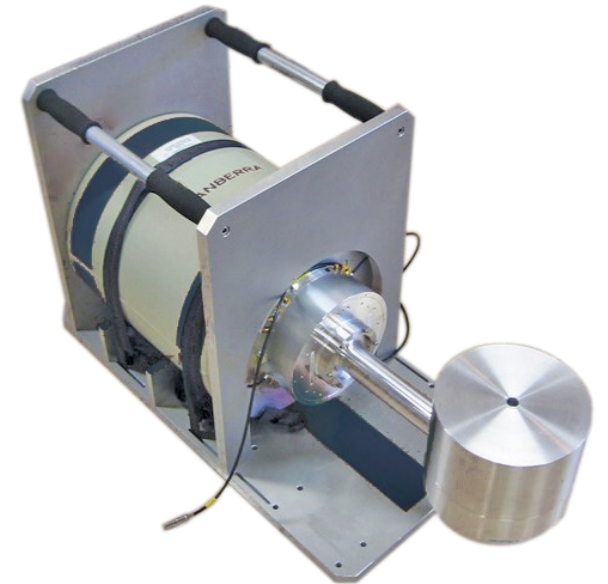
Key Features	User benefits
Highest photopeak efficiency in “add-back” mode	Best signal-to-noise ratio in add-back mode
Highest photopeak efficiency and timing response	Best data quality for multi-parametric physics experiment
FWHM performance 1.33 MeV (^{60}Co): <2.1 keV (typ <1.9 keV) 122 keV (^{57}Co): <1.2 keV (typ <1.0 keV)	Excellent resolution performance for enhanced nuclide identification and quantification
Relative Efficiency per diode for a 4x50x70 20% (typ >23%)	Best high-energy efficiency considered the crystal shape
Position information through segmentation	Reduce Doppler Broadening Better polarization information
Extended energy range Spacer between two neighboring diodes of 0.3 mm	Best add-back capabilities - no dead layer between HPGe
Special cryostat design	The colder is HPGe material -> reducing the neutron damage. Longer uptime before annealing in neutron rich environment
Reduced vulnerability to neutron damages	Less annealing maintenance
Easy access to pumping port	Easy annealing procedures (baking & pumping of the detector)



Compact arrangement of four coaxial Ge crystals in one single cryostat for large efficiency gamma spectroscopy.

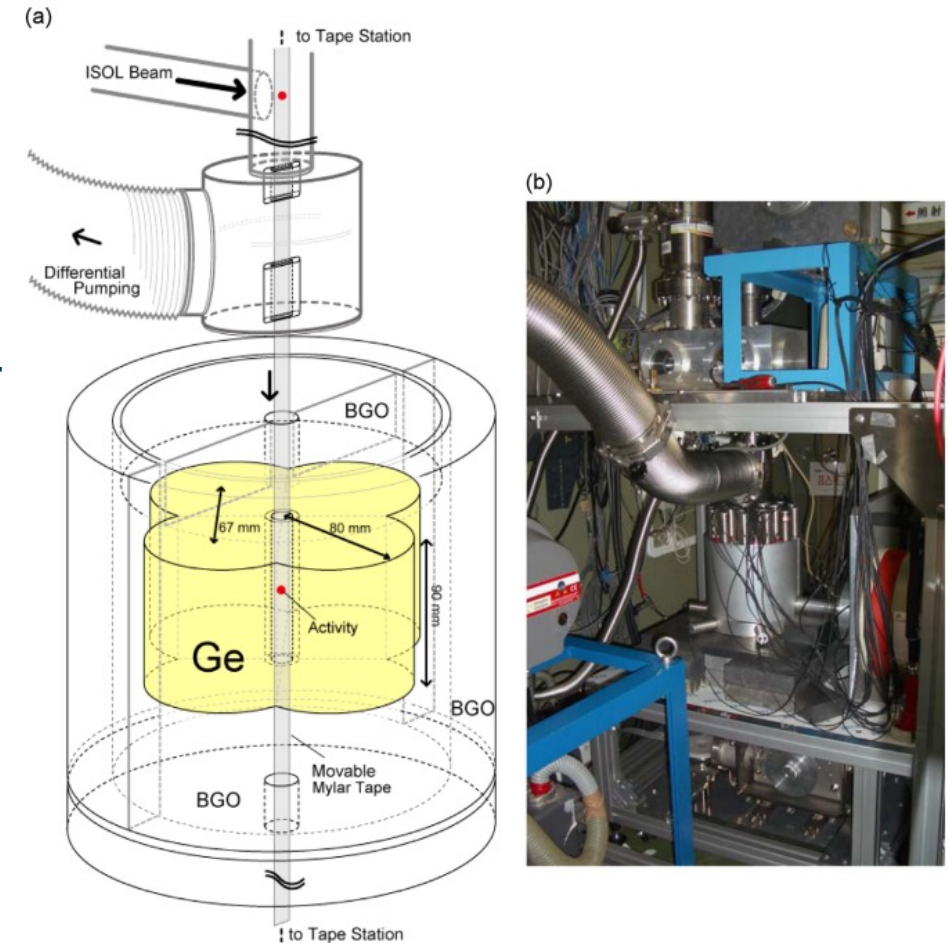
Mirion Clover Detectors - Cryostat

- *Evolutions of cryostat design customization*
 - *Euroball type Clover*
 - *EXOGAM type Clover with "Back Catcher" cryostat*
 - *RDC "design"*



Mirion Clover Detector – True Well

- **Application:** continuous measurement of a tape transport system going through the detector well
- **Goal:** Measurements of High-energy Excited States and gamma-rays of Fission Products with a 4π Clover Detector
- **Experimental setup:** True Well Coincidence counter
 - A total of **10 kg** of HPGe
 - Remote cryostat configuration to ease the use of a veto surrounding detector
 - Typical add-back efficiency:
 - 500% at 1.33 MeV starting with 90% diodes

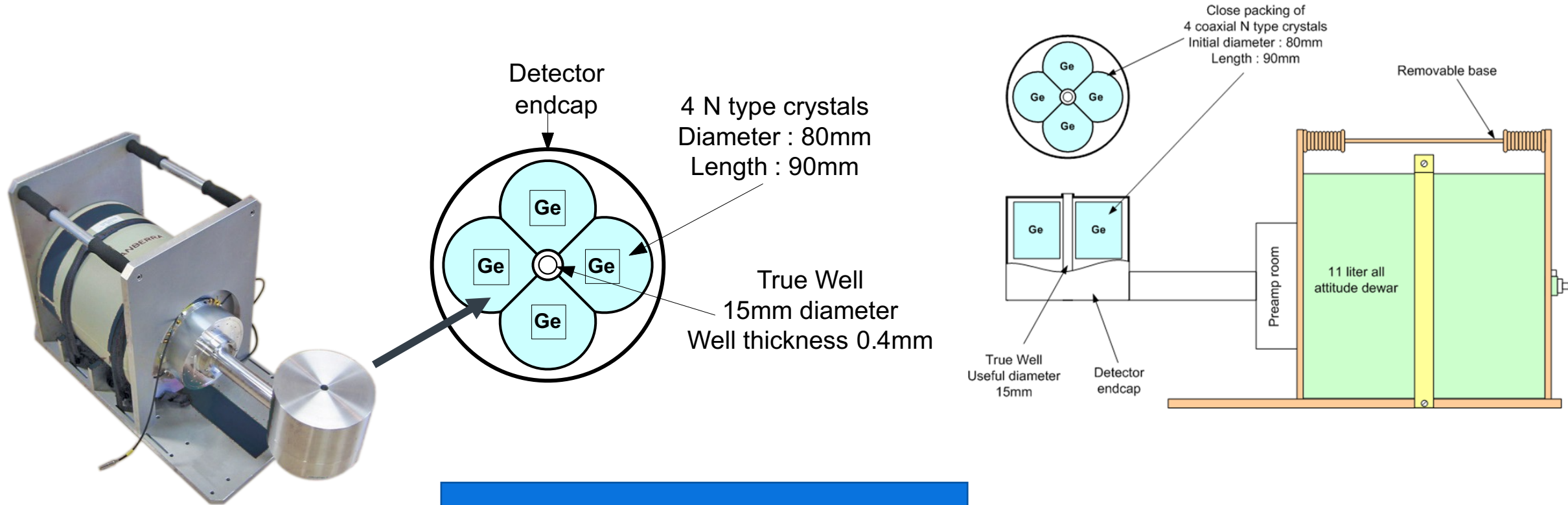


A schematic view of the total absorption clover Ge detector and the tape transport system

NIM in Physics Research A747(2014) 41–51

Mirion Clover Detector – True Well

- True Well Coincidence counter



The largest True Well Type detector ever built worldwide

Mirion Clover - Latest Developments

First Electrical Cooled Clover worldwide

COMPEX: New Electrical Cooled Clover Design
4x50x50x50 (cube-shaped crystals)

FWHM @ ^{60}Co : 1.90 keV

Typical performance of each individual HPGe crystal:

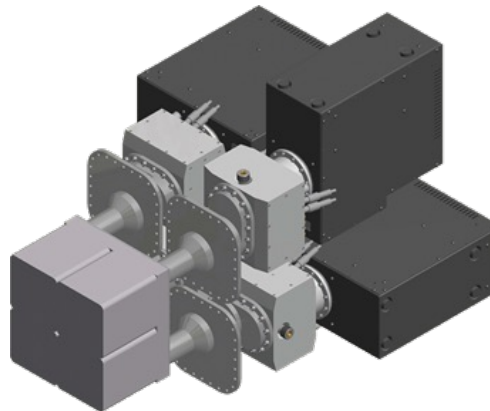
FWHM @ ^{57}Co : 800 eV

Total HPGe material weight per clover: 2.6 kg

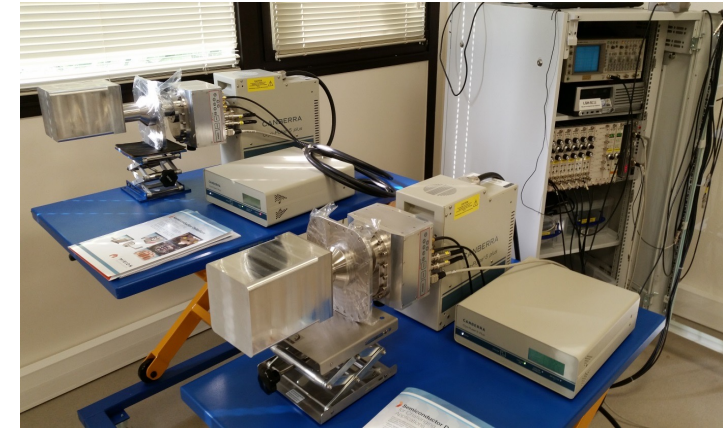
Relative efficiency for single diode 28%

Large Area array configuration possible due to special off-centered cryostat

Possible to use the Clover design in vacuum chamber



20 cm by 20 cm Ge wall



First experiment at GSI involving 4 Compex Clovers
Courtesy Prof. D. Rudolph, Lund University

Mirion Clover – Latest Developments

- **Key features**
- A new cryogenic development to minimize heat losses but without compromises towards the previous LN₂ design
- Identical performance in any orientation
- All previous features are still available
 - e.g. easy FET change, in-situ neutron damage annealing, etc
- 5-year full warranty on the electrical cooler

NOTE: Upgrade option of previous LN₂ Clovers is available

Previous Clover
with LN₂ dewar



New Clover with CP5-plus

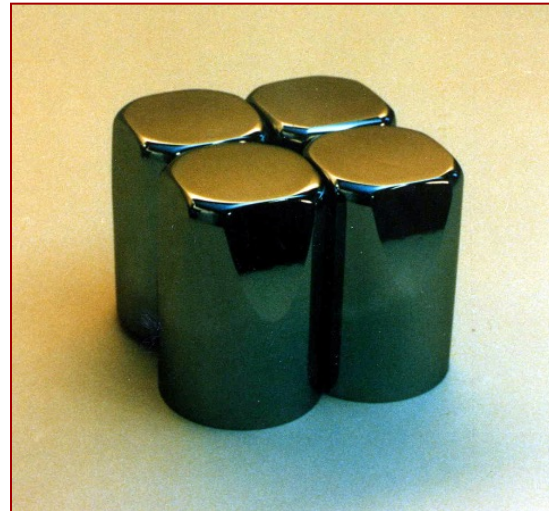


Mirion Clover Detectors

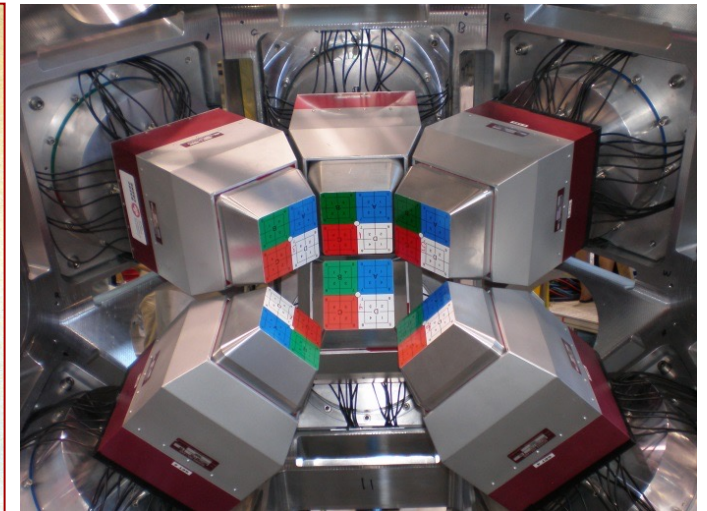
- Different type of Clover detectors available
 - (4x diameter [mm] x length [mm])
 - 4x50x70 (total ~3kg of HPGe material)
 - 4x50x80 (total ~3.3kg)
 - 4x60x60 (total ~3.6kg)
 - 4x60x90 (total ~5.4kg)
 - 4x60x90-seg16
 - 4x60x90-seg32
 - 4x70x70 (total ~5.7kg)
 - 4x70x140 (total ~11.5kg)
 - 4x50x50x50 (cube-shaped crystals)

Largest database of Clover references available!

340 Clover Detectors Delivered!



Adaptable design of four HPGe crystals for Nuclear Physics applications worldwide



TIGRESS array at TRIUMF

Courtesy of Prof Carl Svensson – University of Guelf
Advancing Radiation Safety.
Empowering Progress.

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Segmented Custom HPGe detectors



Segmented Custom HPGe detectors

Key Features

- *Multiple segments enable **3D event localization** inside the crystal*
- **Anti-coincidence** operation improves signal-to-noise ratio

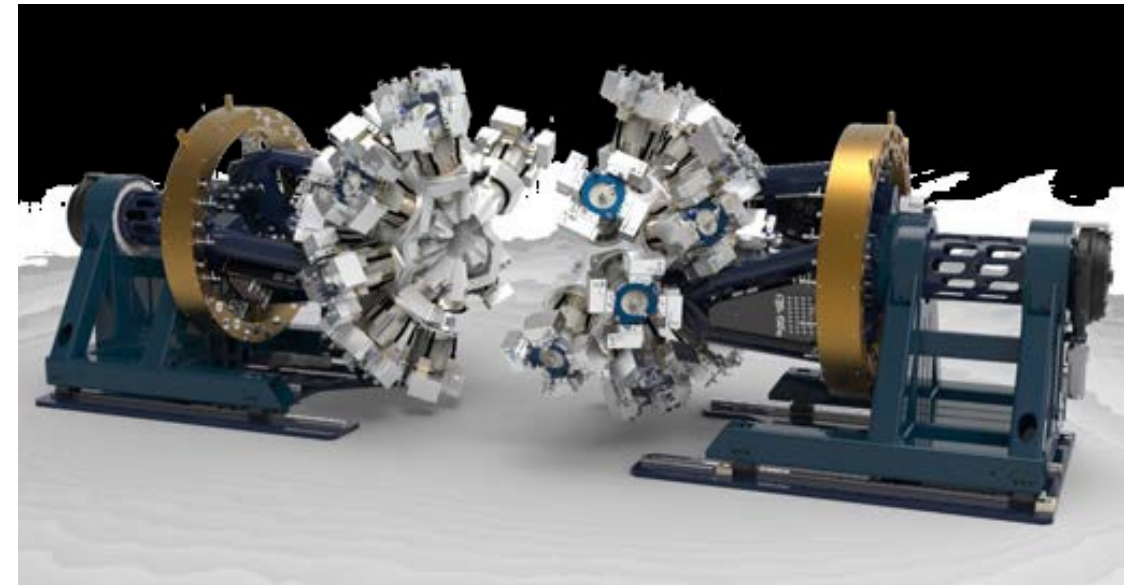
Research Impact

- *Enables **background rejection and event reconstruction***
- *Useful in **gamma-ray tracking arrays** for nuclear structure studies*

Mirion Solution for Nuclear Physics: GRETA

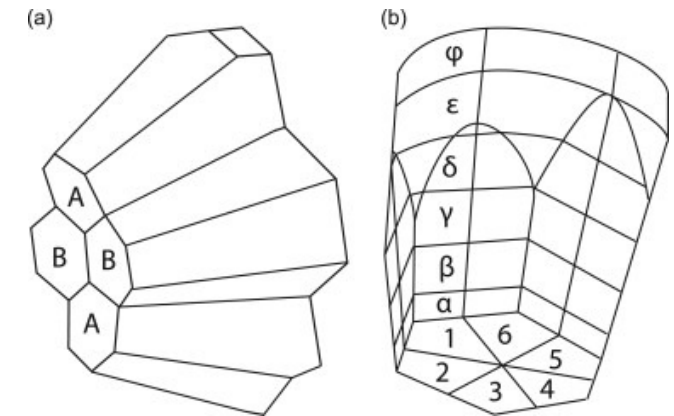
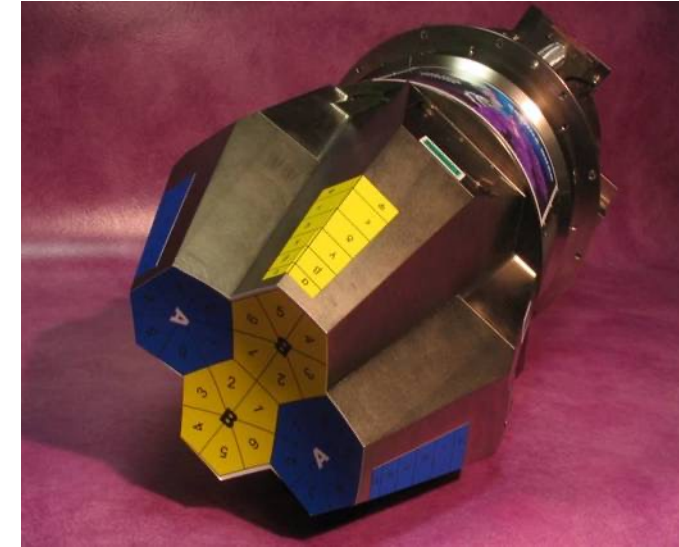
- The **Facility for Rare Isotope Beams (FRIB)** is a world leading accelerator facility to understand the properties of exotic nuclei and how the elements are synthesized
- **GRETA** is a state-of-the-art gamma-ray detector system
- Designed to revolutionize gamma-ray spectroscopy with **enhanced resolution, efficiency, Peak-to-Total, and tracking capabilities**
- Provide unparalleled insight into the structure of atomic nuclei
- Enable precision measurements in **nuclear physics, astrophysics, and fundamental symmetries**

Gamma-Ray Energy Tracking Array (GRETA) will be a major instrument at FRIB and provides the sensitivity to enable a broad range of physics with both fast-fragmentation and reaccelerated beams



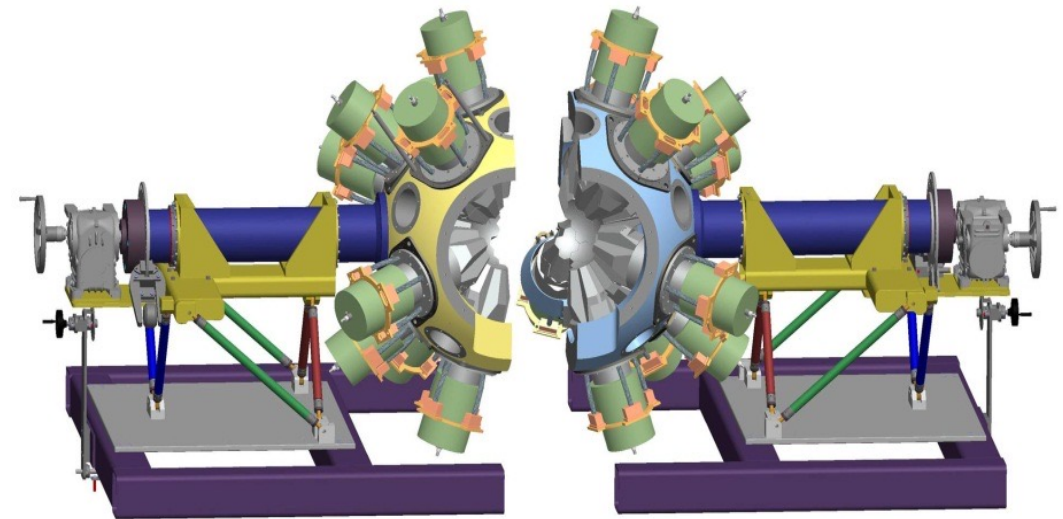
Mirion Solution for Nuclear Physics: GRETA

- **120 HPGe crystals** arranged in a 4π geometry
 - **Signal digitization** and real-time gamma-ray tracking using sophisticated algorithms
 - *3D position sensitivity to reconstruct gamma-ray interaction paths*
- **HPGe detector solution**
 - Coaxial N type 80 mm diameter x 90 mm length
 - Segmented in 36 folds (6 longitudinal x 6 transverse)
 - Encapsulated in an aluminum canister
 - 4 capsules mounted in a Quad detector module
 - 2 hexagonal detector shapes
 - A common cryostat for the 4 capsules
 - Dedicated preamplifier electronics

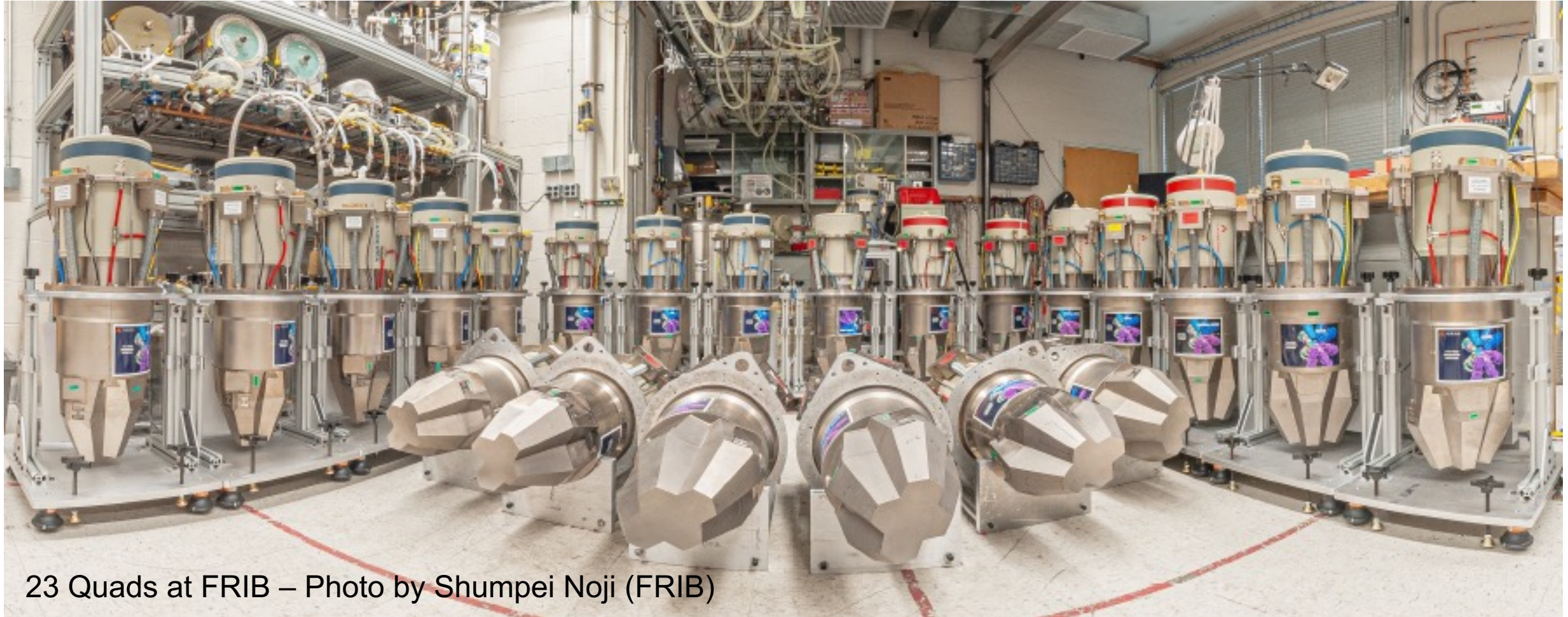


Mirion Solution for Nuclear Physics: GRETA

- A shell of closely packed HPGe crystals
- Identify the position and energy of g-ray interaction points within a compact “shell” of detectors
- Track g-ray path both within and between detector elements, using the angle-energy relation of the Compton scattering process
- *Will offer **unprecedented insight into nuclear reactions***
- *Essential for understanding **r-process nucleosynthesis, rare isotopes, and new modes of decay***
- *A flagship project for the **U.S. nuclear physics community***



Example of GRETA Detectors



23 Quads at FRIB – Photo by Shumpei Noji (FRIB)

Mirion Solution for Nuclear Physics: AGATA

*Advanced GAMMA Tracking Array is a new generation **high-resolution** g-ray spectrometer providing unprecedented Doppler-correction capabilities thanks to a combination of fine **detector segmentation**, **efficient pulse-shape analysis algorithms**, and implementation of an innovative **g-ray tracking** concept.*

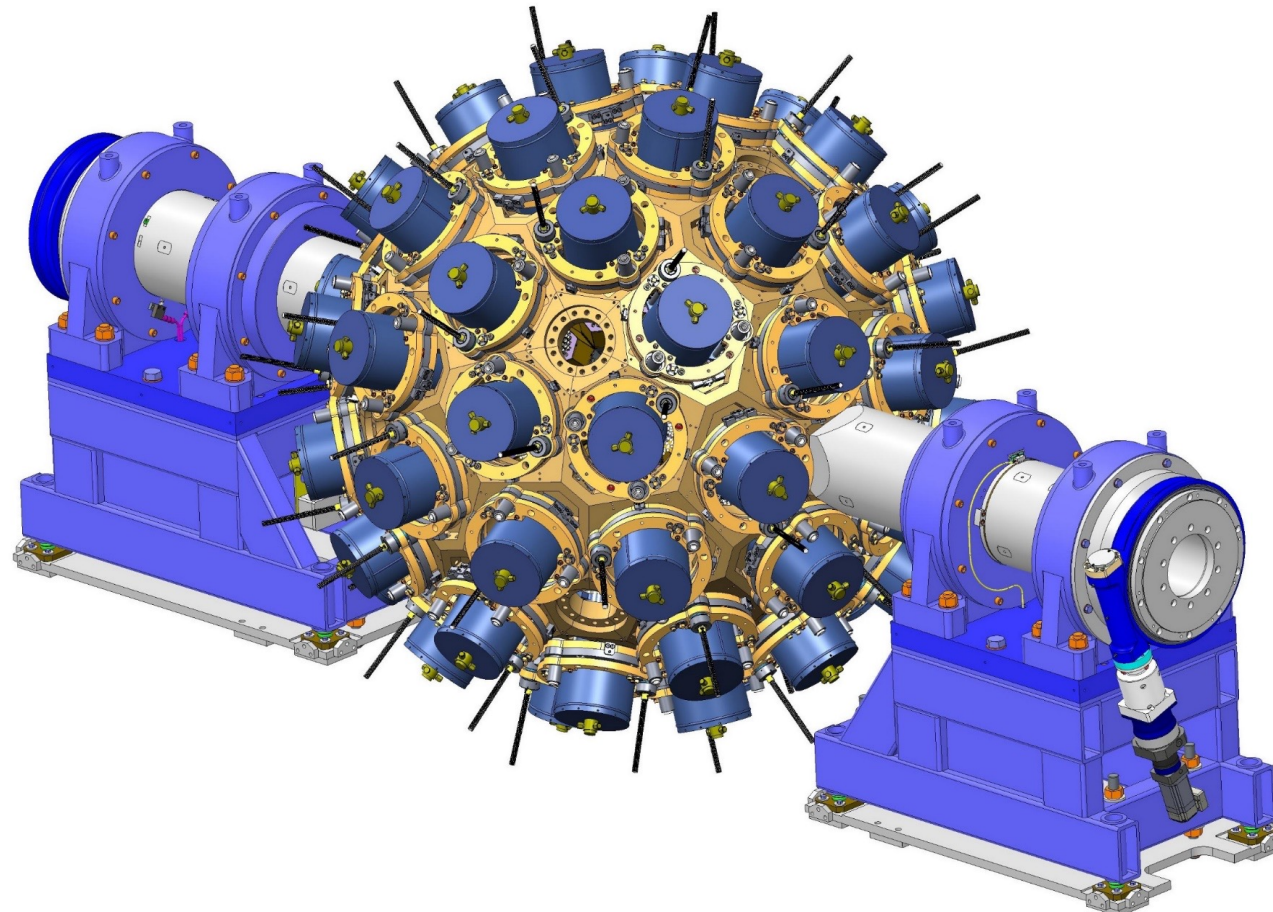


Left: Current configuration of AGATA at LNL.

Right: CAD images of the 2π structure equipped with detectors, and of the future 4π structure. Figure taken from [NuPECC LRP 2024](#).

Mirion Solution for Nuclear Physics: AGATA

Design view of the AGATA spectrometer showing the mechanical holding frame (orange) and cryostat dewars (blue) of the Ge detectors



Mirion Solution for Nuclear Physics: AGATA

- *The AGATA Triple Cluster (ATC) detector is a state-of-the-art instrument designed for high-resolution gamma-ray spectroscopy, playing a crucial role in nuclear-structure studies.*
- *It consists of three asymmetric, 36-fold segmented, hexagonal-shaped, encapsulated, and tapered HPGe detectors.*
- *Each ATC integrates 111 high-resolution spectroscopy channels, combining core contacts and segment signals from each crystal to provide exceptional performance.*

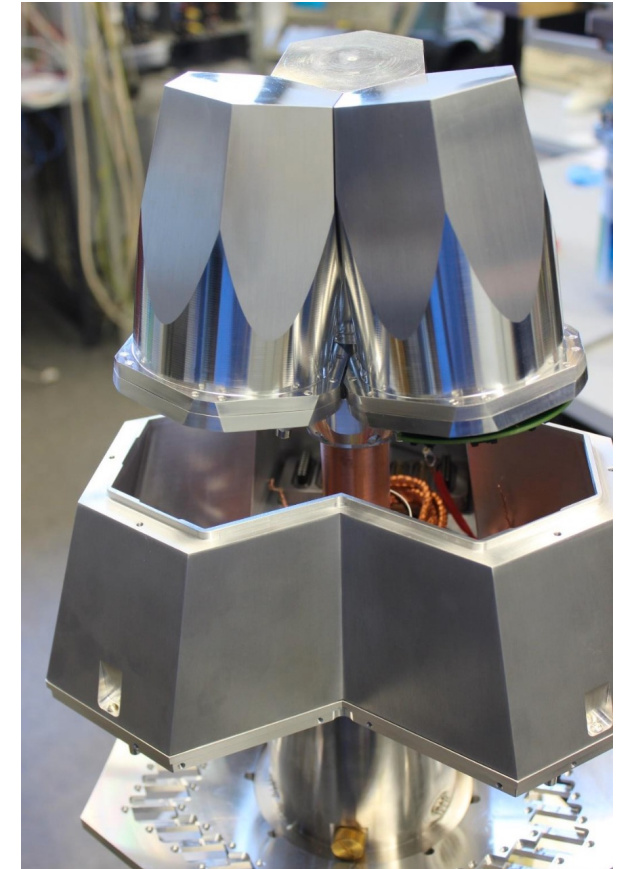
Uses **pulse-shape analysis** and **real-time gamma-ray tracking** to reconstruct full interaction paths

Supported by **digital electronics** and sophisticated data acquisition systems



Mirion Solution for Nuclear Physics: AGATA

- *AGATA has been deployed at several major facilities (GSI, GANIL, LNL, etc.).*
- *Ongoing development to expand coverage and integrate with next-generation beamlines.*
- *Long-term plan: Complete the full 4π array (~ 180 crystals) for maximum efficiency.*
- *Critical for advancing knowledge in **nuclear structure, astrophysical processes, and rare isotope behavior.***
- *A cornerstone for experimental campaigns at **Europe's nuclear physics laboratories.***



Specialty Ultra-Low Background HPGe Detectors



Custom S-ULB HPGe Detectors

Key Features

- Built from **radiopure materials** to minimize natural radioactivity
- Shielded and often operated **underground** to reduce cosmic ray background
- Capable of detecting **extremely rare nuclear processes**

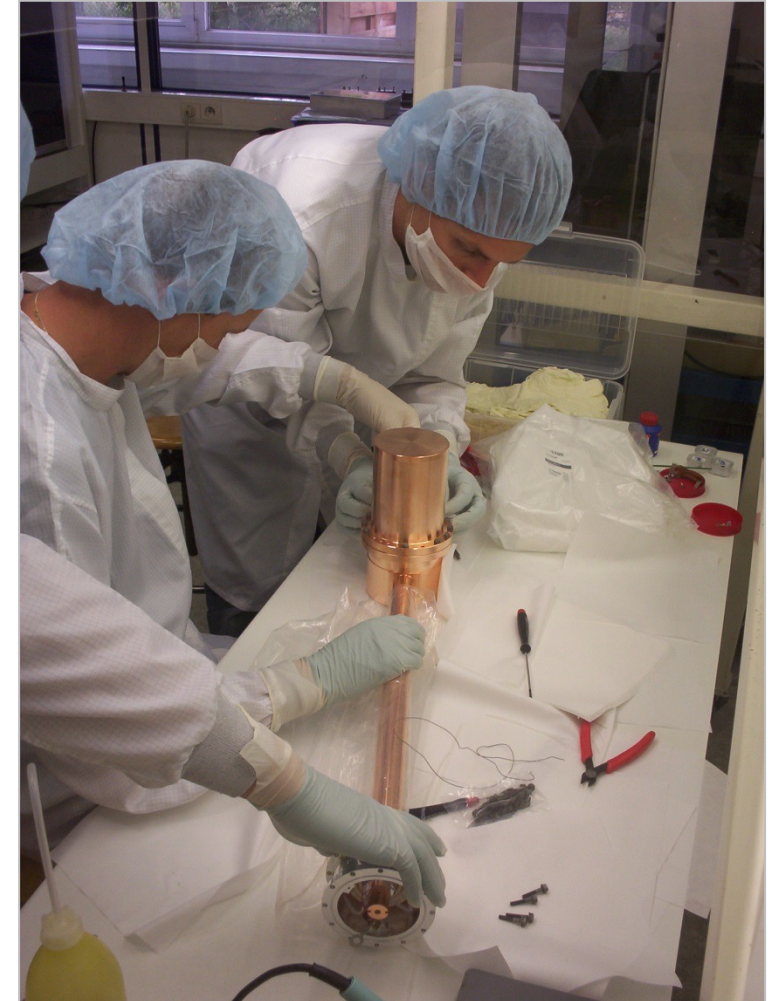
Research Impact

- Essential for **rare decay searches** and **environmental background measurements**
- Example: Detectors for **LEGEND project**

Mirion Specialty Ultra-Low Background HPGe Detectors

Typical requirements for S-ULB projects

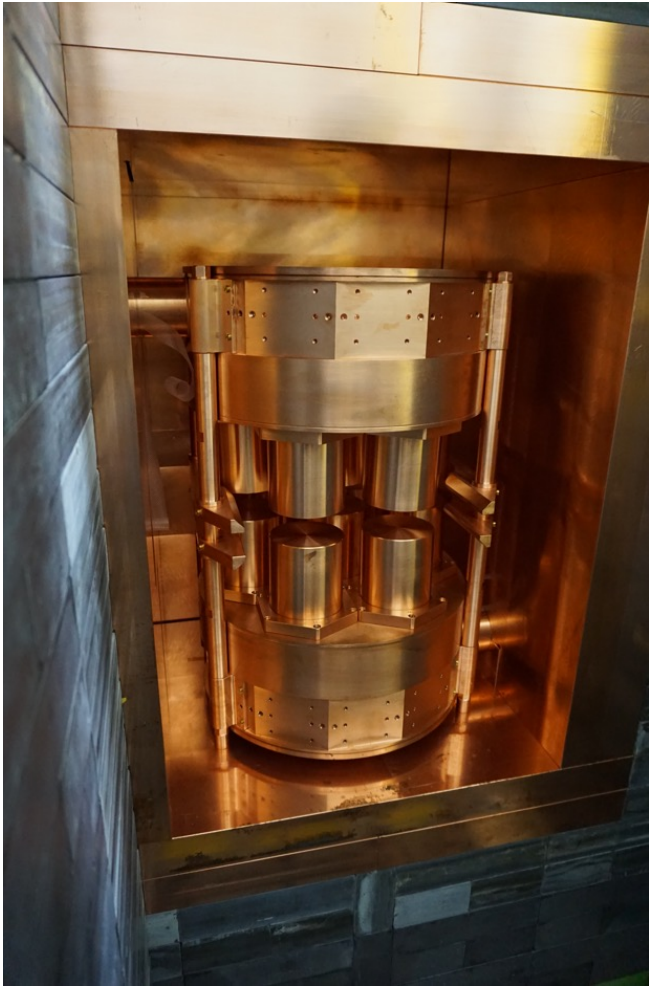
- **Non-standard** challenging techniques for ensuring radiopurity
 - *Special and selected materials*
 - *Specific soldering*
 - *Assembly in clean room environment*
 - *Underground storage at all possible times to minimize cosmic ray exposure*
- **Sea level transportation is mandatory to avoid activation**
- **Special detector **packing**** (air-tight envelopes to avoid radon, neutron moderator materials...)
- **Typical Detectors**
 - *Coax P-type / N-type*
 - *Custom BEGe – up to 100 mm diameter*
 - *SAGe Well 250cc and 400cc active volume*



Mirion Specialty Ultra-Low Background HPGe Detectors

- **Application:** physics research (rare decay exploration like ^{180m}Ta)
- **Massive array ULB detection system**
 - 2x seven 70% HPGe crystals
 - Global relative efficiency: 980%
- **Average resolution FWHM on 14 crystals**
 - 0.85 keV @ 122 keV
 - 1.90 keV @ 1332 keV
 - High sensitivity measurement of U and Th contamination

Isotopes		Peak (keV)	Efficiency (%)
^{232}Th	^{228}Ac	911	5.8
		968	5.5
	^{212}Pb	238	9.7
	^{212}Bi	727	6.8
	^{208}Tl	<u>2615</u>	2.0
		<u>583</u>	4.7
		860	4.7



Detector array[1] operated by CUP, IBS. Image copyright CUP, IBS, 2017.
 [1] D.S. Leonard et al. NIM A 989 (2021) 164954

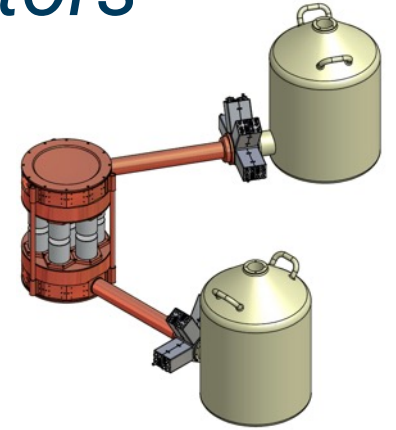
Mirion Specialty Ultra-Low Background HPGe Detectors

Ultra Low Background HPGe detectors for underground labs

- *Configuration: coaxial, well or SAGE Well with the best radio-purity for all the parts involved (Ge, Cu, Al, electronics)*
- *Applications:*
 - *Material screening for large experiments in Underground Labs*
 - *Low level spectroscopy (sediments, dating)*

Point Contact (SAGe) technology Neutrino Physics and Dark Matter search

- *Combine best spectroscopy performance: lowest noise, highest efficiency, lowest background*
- *Application:*
 - *Neutrino physics, MAJORANA, GERDA, LEGEND*



Mirion Specialty Ultra-Low Background HPGe Detectors

- Example of « on-the shelf » S-ULB detectors using our ULB materials
- Boulby Mine, UK

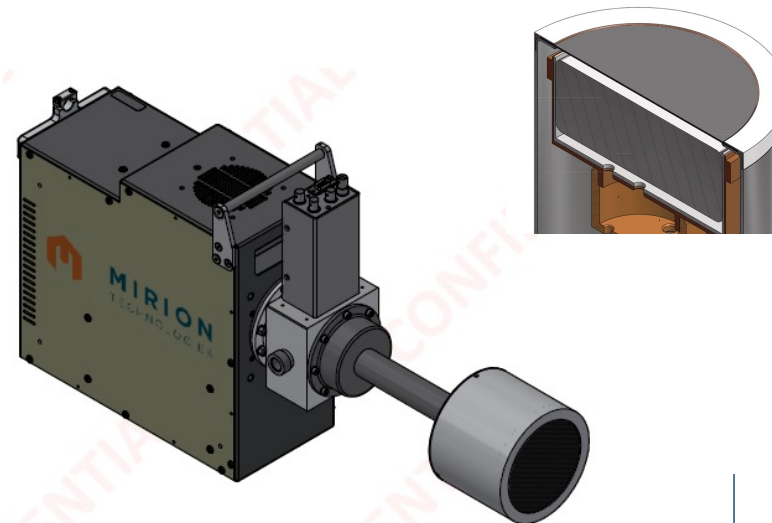
	Detector	Count Rate ($\text{kg}^{-1} \text{d}^{-1}$)						
		Integral 100–2700 keV	351 keV ^{214}Pb	609 keV ^{214}Bi	238 keV ^{212}Pb	1461 keV ^{40}K	2615 keV ^{208}Tl	46.5 keV ^{210}Pb
SEGe 160%	Belmont	90(9)	0.2(1)	0.4(2)	0.13(8)	1.0(2)	0.3(1)	-
SEGe 100%	Merrybent	145(12)	2.5(3)	1.8(3)	0.3(1)	1.9(3)	0.8(2)	-
	Lunehead	540(25)	5.6(5)	4.7(4)	8.3(5)	9.1(6)	2.0(3)	-
BEGe 6530	Roseberry	130(11)	0.15(7)	0.15(7)	0.8(3)	0.8(2)	0.2(1)	0.4(6)
	Chaloner	1045(30)	5(1)	4(1)	7(1)	8.4(14)	2.1(5)	1.8(11)
S-ULB & CP5-plusupgrade	Lumpsey — 2021	515(25)	1.1(7)	1.3(3)	1.1(7)	1.7(7)	0.2(2)	1.7(6)
SAGeWell standard ULB version	Lumpsey — 2019	36880(6)	114(4)	68(3)	172(5)	8(1)	11(1)	14(2)

<https://www.boulby.stfc.ac.uk/Pages/Ultra-low%20Background%20Material%20Screening.aspx>

<https://iopscience.iop.org/article/10.1088/1748-0221/19/01/P01017>

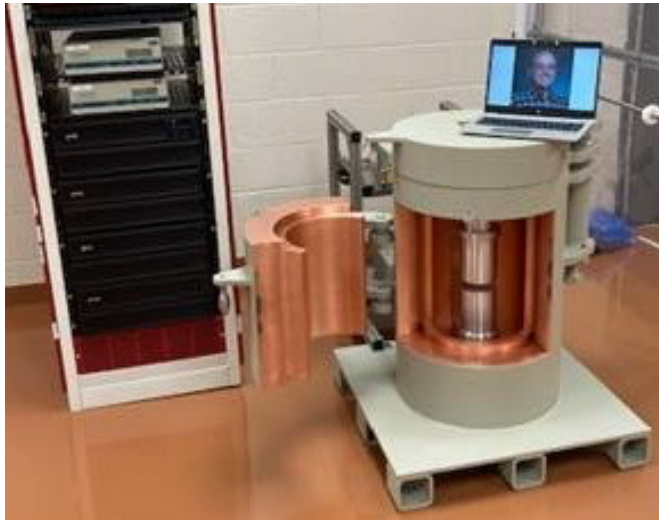
Mirion Specialty Ultra-Low Background HPGe Detectors

- *HPGe crystal: diameter 100 mm, thickness 35 mm*
- *Measured Spectroscopy Performance:*
 - *At 122keV: 660eV*
 - *At 1.33MeV 1.72keV*
 - *Symmetry factors at 1.33MeV:*
 - *FWTM/FWHM: 1.84*
 - *FWFM/FWHM: 2.56*
 - *Relative efficiency at 25cm : 91%*
- *Carbon entrance window 0.6 mm thick*

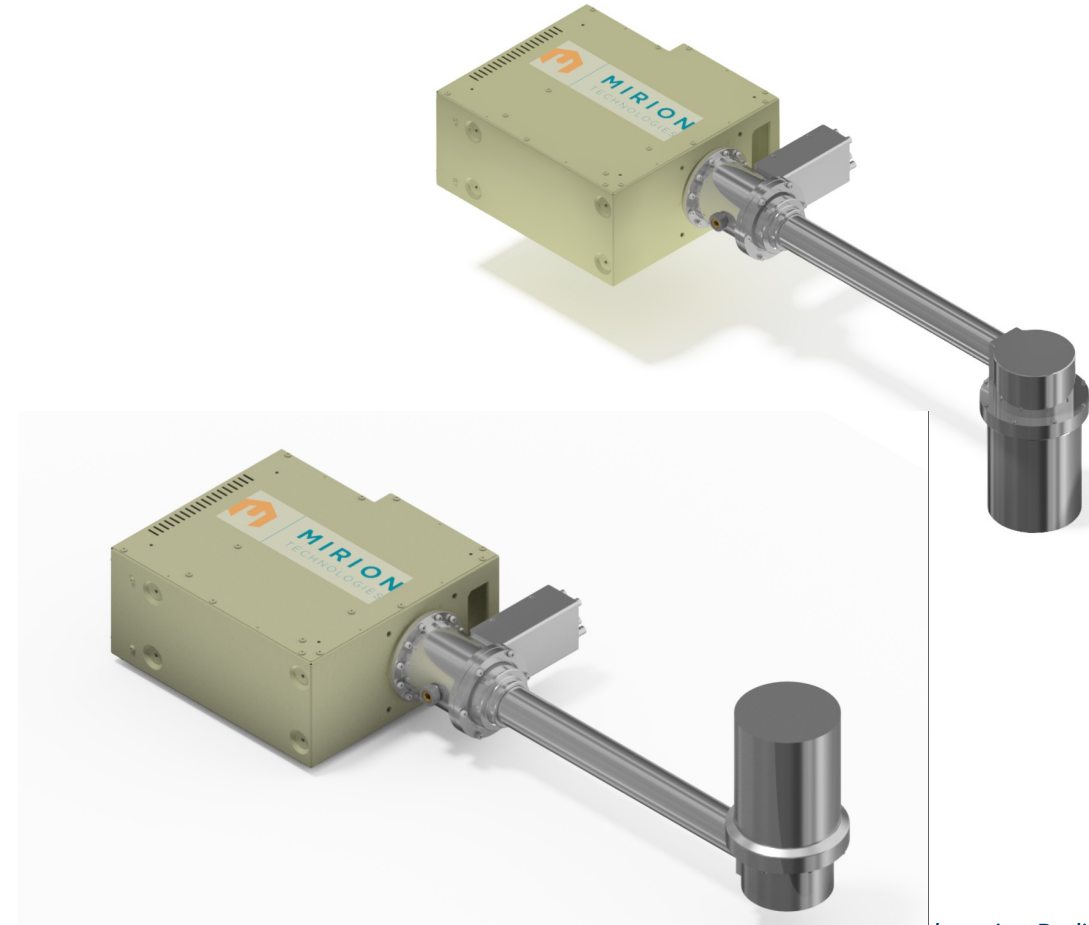


Mirion Specialty Ultra-Low Background HPGe Detectors

- *Top Bottom configuration:*
- *two custom BEGe type detectors*
- *CP5 Plus*
- *Close to 4pi solid angle configuration*
- *Possibility for coincidence / add-back*



- *S-ULB BEGe in coincidence configuration*



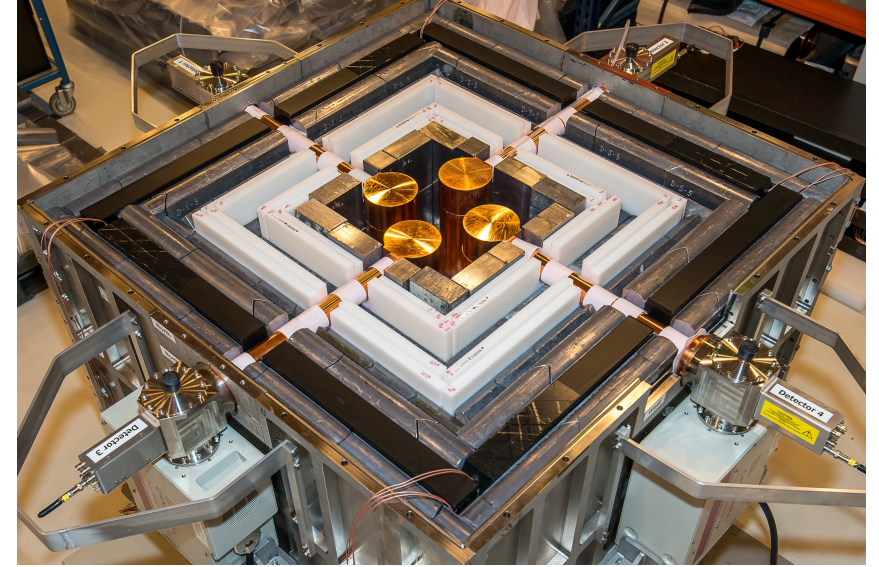
“Exotic” Mirion Specialty Ultra-Low Background HPGe Detectors

Primary application:

Detection and precise measurement of coherent neutrino-nucleus scattering

Point Contact detector technology on P-type HPGe crystals with minimized time exposed to cosmic activation with best pulser resolution for Rare Events detection

- CMOS electronics for best low-energy threshold
- PPC detectors
- Radiopure: Ultra-Low background materials
- <80 eV FWHM test pulser with 2.4 kg crystal



<https://en.wikipedia.org/wiki/CONUS-Experiment#/>



Advancing Radiation Safety.
Empowering Progress.

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Space Applications



Custom HPGe for Space Applications

Key Features

- *Radiation-hardened for cosmic radiation and solar events*
- *Compact for spacecraft and satellite payloads*
- *Wide detection range: gamma rays, X-rays, and charged particles*
- *High sensitivity and excellent energy resolution for spectroscopy*
- *Long-life, low-maintenance operation for multi-year missions*

Research Impact

- *Planetary Science: Elemental and isotopic analysis of planetary surfaces and atmospheres*
- *Detect gamma-ray bursts, solar flares, cosmic rays*
- *Radiation Environment Monitoring: Supports spacecraft and crew radiation safety*
- *Enables extended observations of Space*

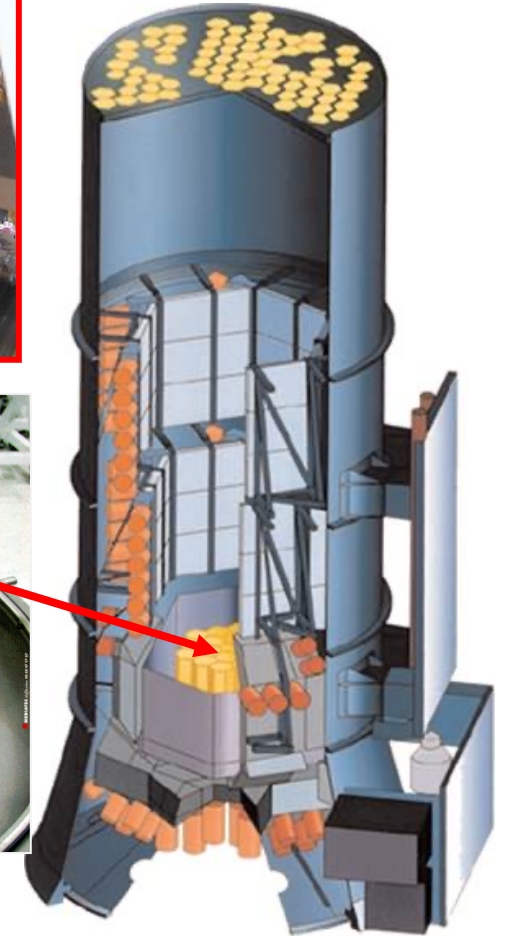
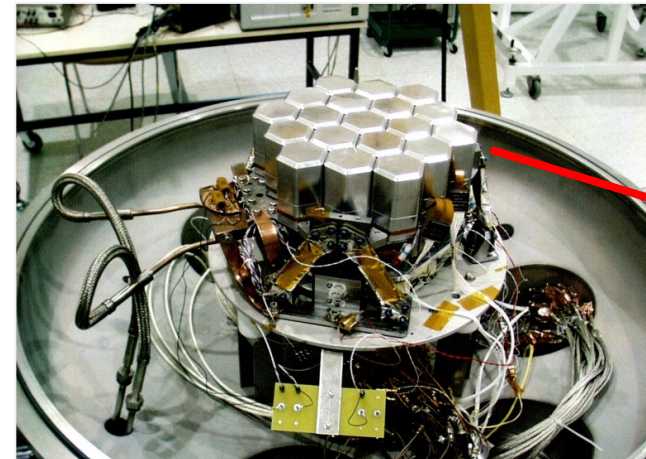
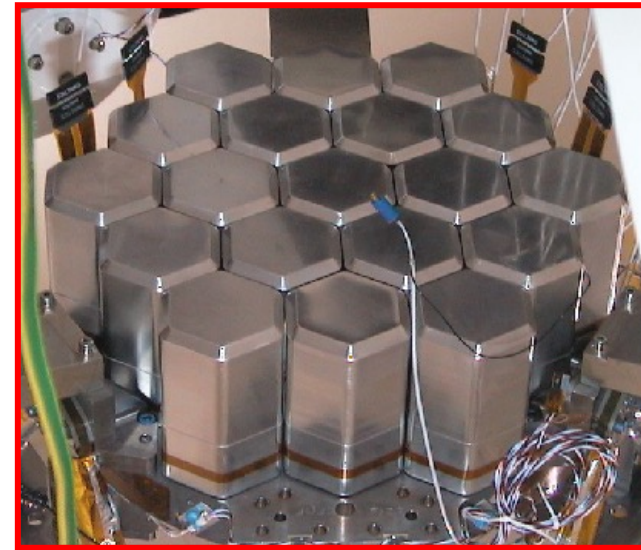
INTEGRAL-SPI Mission

- **INTEGRAL-SPI: INTERNATIONAL Gamma-Ray Astrophysics Laboratory**, on which is installed the **SPECTrometer for Integral**
 - An international project, involving the ESA, NASA, RKA
 - Several Instruments: SPI (Spectrometer), IBIS (Imager on Board the Integral Satellite), JEM-X (Joint European X-ray Monitor), OMC (Optical Monitoring Camera)
- **Mission**
 - Goal: Gamma-Ray Astronomy
 - Launch date: 17th October 2002
 - Status: still ongoing, at least until 2029
 - <https://www.cosmos.esa.int/web/integral>



INTEGRAL-SPI Mission

- **Spectrometer for Integral is a gamma spectrometer**
 - Measures radiation from 20 keV to 8 MeV
 - **Array of 19 encapsulated HPGe detectors**
 - *Each detector is a hexagonal 40% (200 cc) HPGe detector that with stands 50g vibrations*
 - *Energy resolution: 2 keV @ 1MeV*
 - *Gap between each detector: 3.5 mm*
 - *Cooling: YES, electrical*
 - *Annealing: YES*
- **Application**
 - *Detect, localize and measure gamma rays emitted by black holes, neutron stars, etc*
- **Key accomplishments:**
 - *Advancements of astrophysical models and our understanding of the universe*



INTEGRAL-SPI: current status

- Still in **excellent working conditions** even 20 years later after the rocket launching

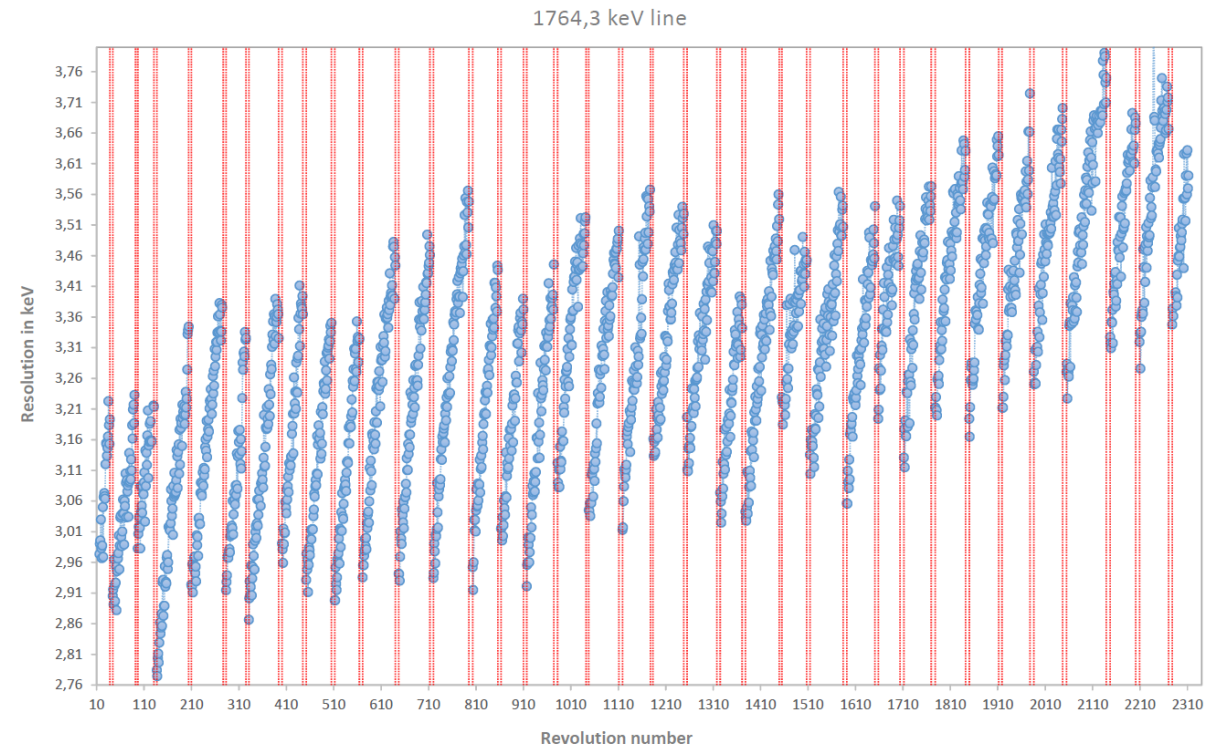
- More than 35 annealing cycles of 200 hours (7000 hours)
- Energy FWHM comparison

Energy	Initial FWHM	Current FWHM
198 keV	1.87 keV	2.01 keV
1764 keV	2.97 keV	3.07 keV
2754 keV	4.11 keV	4.30 keV

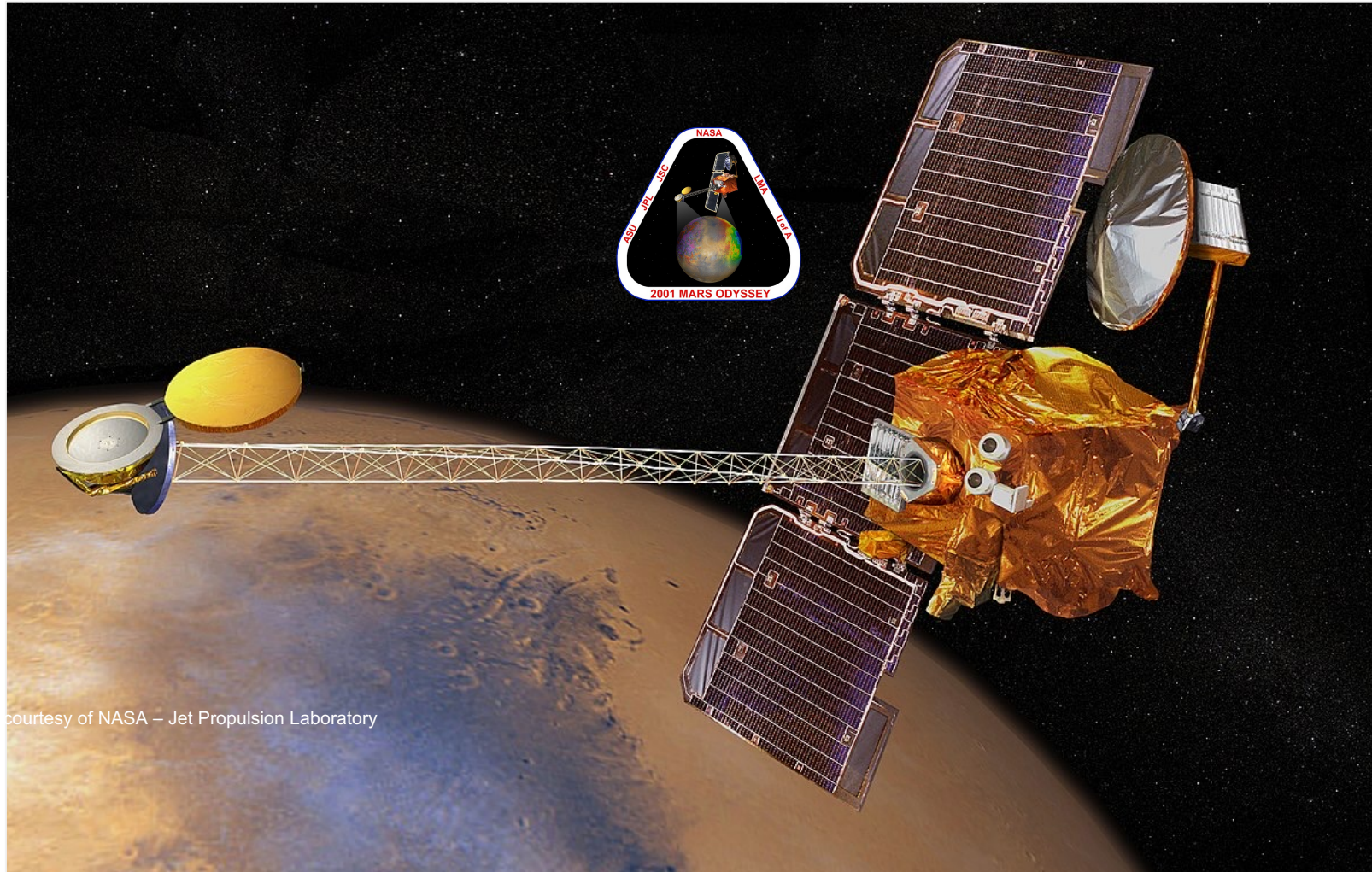
- **Future**

- The plan is to continue the scientific observations until the satellite will fail: the satellite will probably fail before the spectrometer!
- Re-entry in Earth's atmosphere and destruction in 2029?

^{205}Bi peak energy resolution monitoring over time
(and annealing cycles)



MARS Odyssey Mission



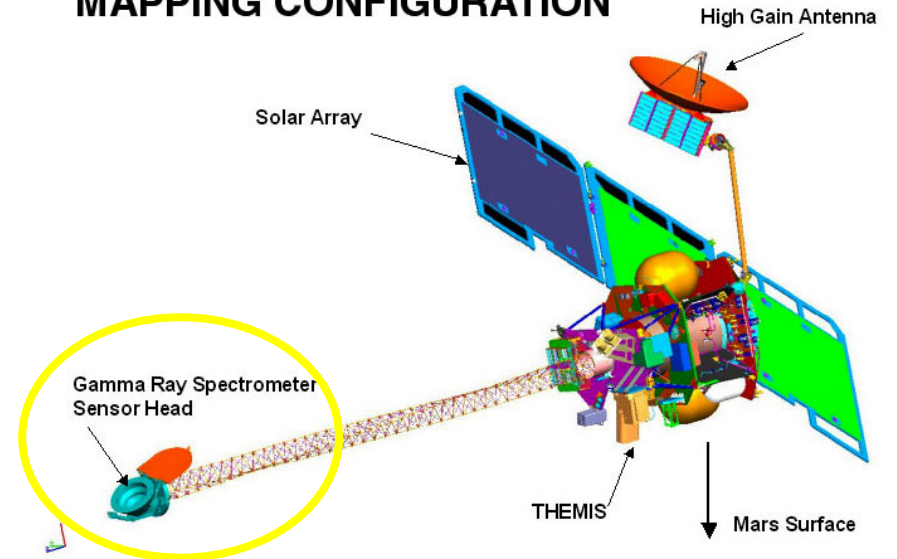
courtesy of NASA – Jet Propulsion Laboratory

MARS Odyssey Mission

▪ MARS Odyssey Mission

- *Launch Date: April 7, 2001*
- *Arrival Date: October 23, 2001*
- *3 instruments:*
 - **GRS – Gamma-Ray Spectrometer:** *measures how much hydrogen is present in the upper 3 feet of the planet's soil*
 - **THEMIS – Thermal Emission Imaging System**
 - **MARIE – Mars Radiation Environment Experiment**
- **Mission:** *2 years study of elemental composition and radiation on Mars*
 - *August 24, 2004: official end of MARS Odyssey's primary science mission.*
 - *Available flight system resource capabilities through the next 10 years: operations continue today as a communications relay for rovers and landers on Mars ("Spirit" and "Opportunity", "Phoenix" and "Curiosity").*

MAPPING CONFIGURATION



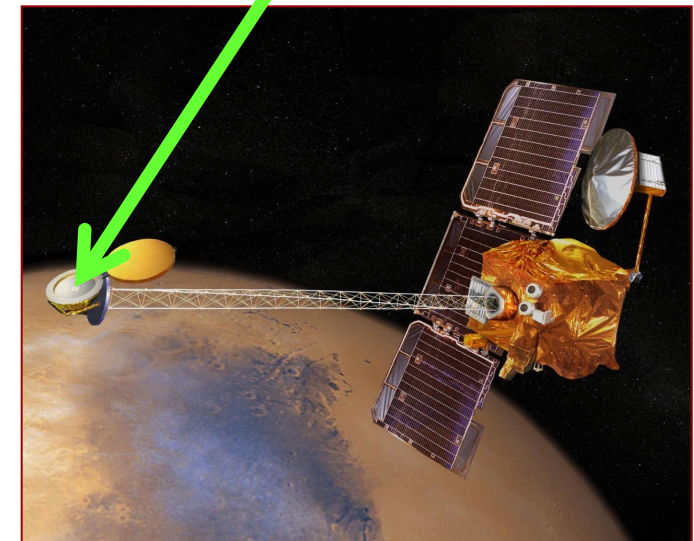
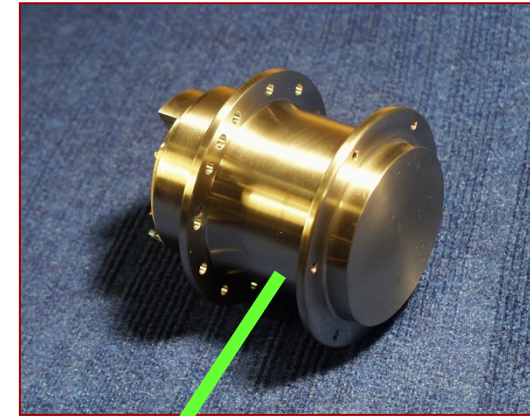
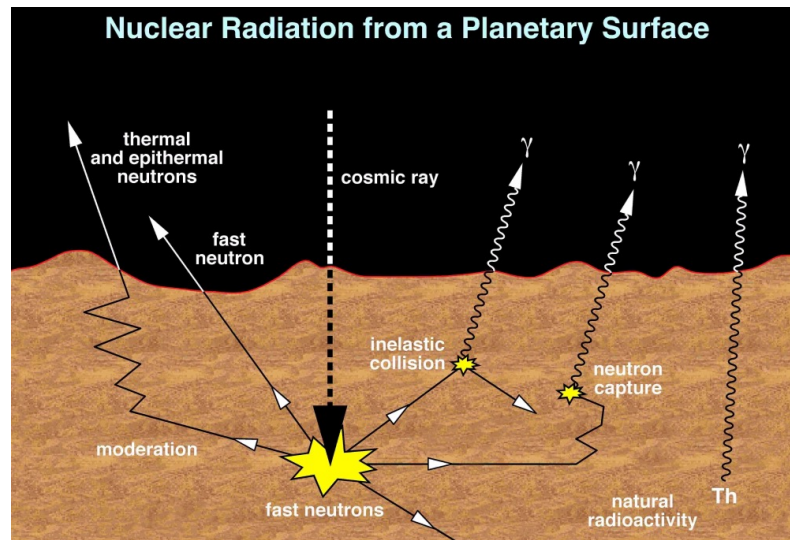
<https://mars.nasa.gov/odyssey/index.cfm>

MARS Odyssey: focus on GRS

- **The GRS instrument**

- 1.2 kg HPGe crystal in a Titanium capsule
- Cooling through radiative cooler and thermal shield

- Martian soils **elemental composition study** using gamma-ray fluorescence thanks to “cosmic ray activation”

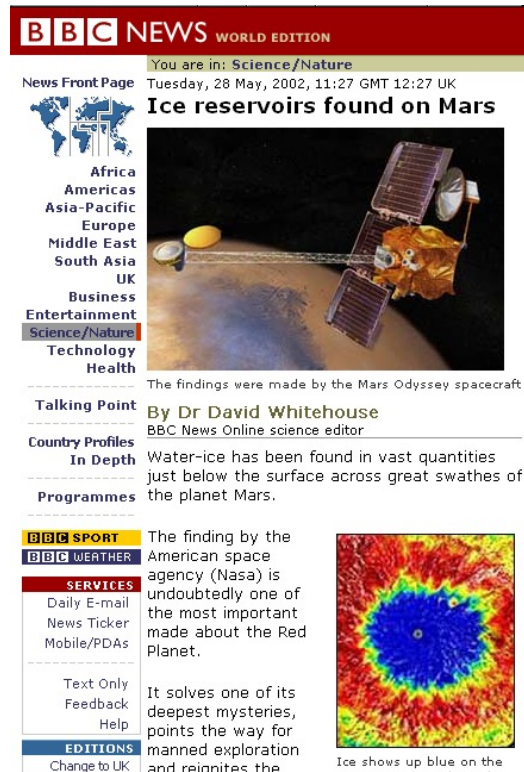


MARS Odyssey: results

Major key accomplishment

- 28 May 2002: **Ice was found on Mars!**

- GRS on board NASA's Mars Odyssey spacecraft have revealed more underground ice on the Red Planet than scientists expected
 - Confirmed the presence of water on Mars
 - Mapping of water on Mars



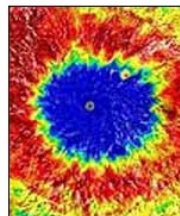
The findings were made by the Mars Odyssey spacecraft

By Dr David Whitehouse
BBC News Online science editor

Water-ice has been found in vast quantities just below the surface across great swathes of the planet Mars.

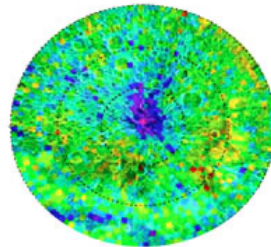
The finding by the American space agency (Nasa) is undoubtedly one of the most important made about the Red Planet.

It solves one of its deepest mysteries, points the way for manned exploration and reignites the question of whether life may exist on the planet.

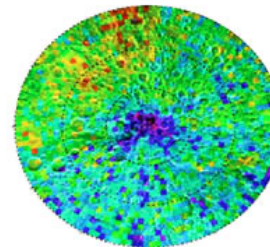


Ice shows up blue on the gamma-ray spectrometer

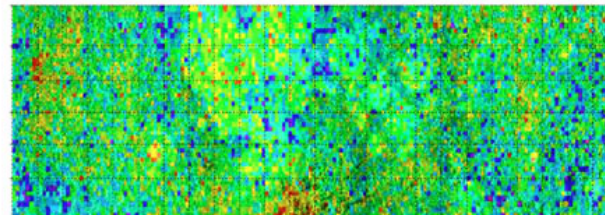
North Lunar Pole



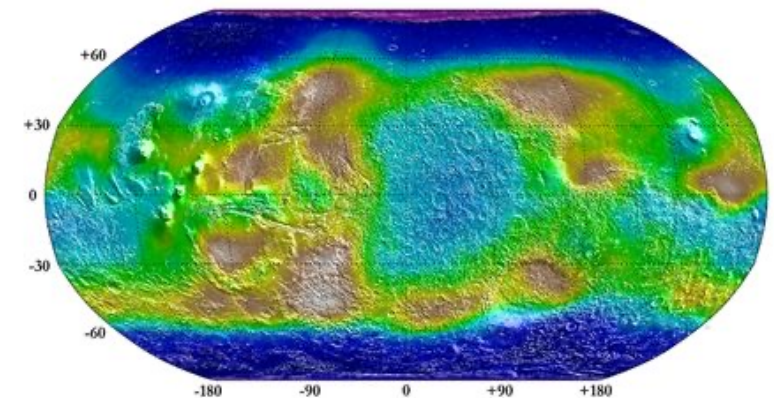
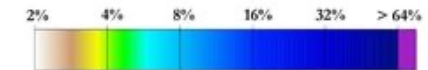
South Lunar Pole



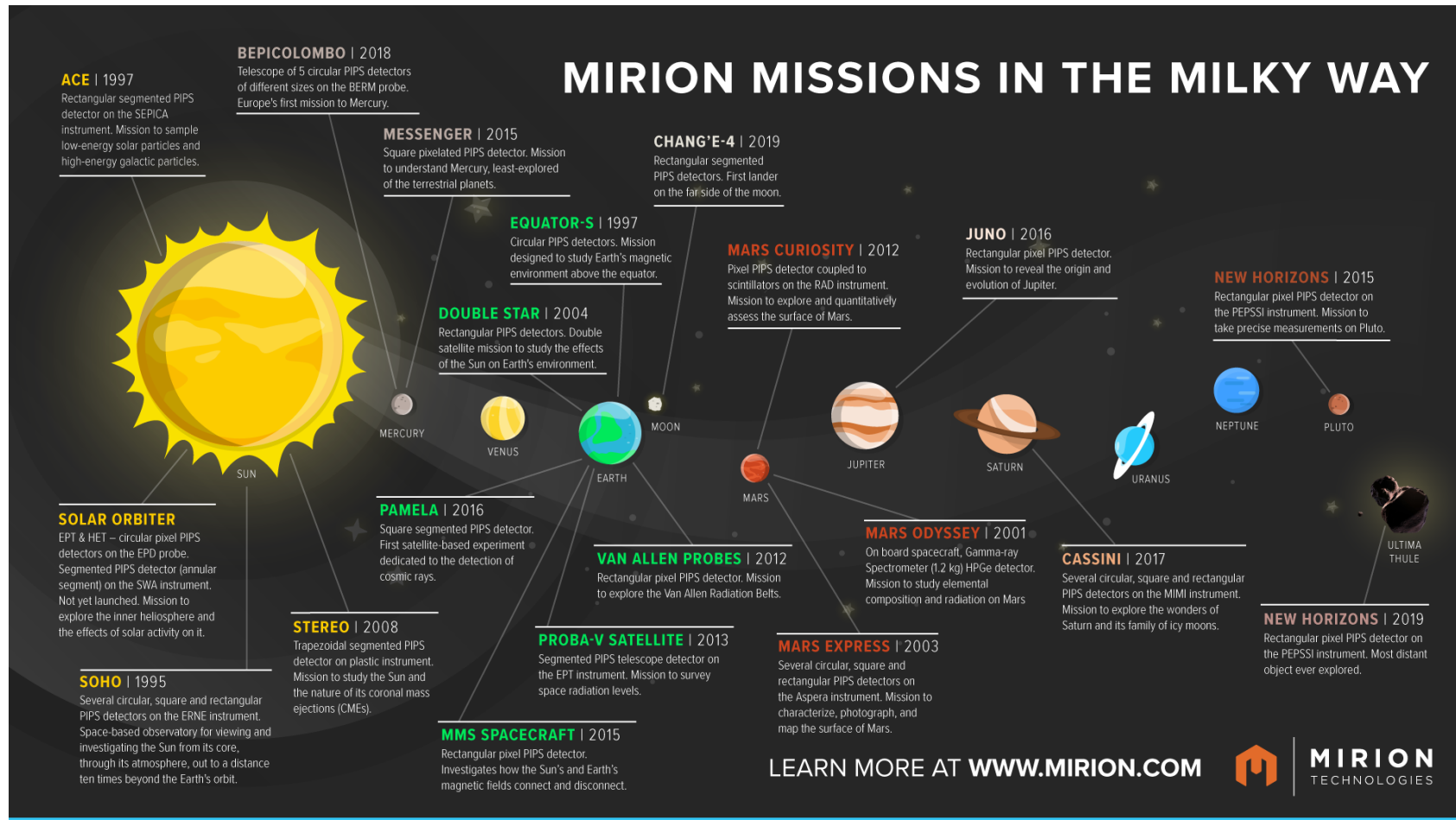
Lunar Mid-latitudes



Lower-Limit of Water Mass Fraction on Mars



Mirion Space Mission



<https://www.mirion.com/solutions/research-education/protecting-astronauts-in-space>

Summary

Fundamental Research

Supporting next-generation of nuclear and particle physics research

Custom Solutions

Providing custom detector for global research programs

Survey for:

Advancing Innovation with Specialty HPGe Detectors



*Please take a moment
to fill out a short survey
on this session.*

Questions?



Thank you

